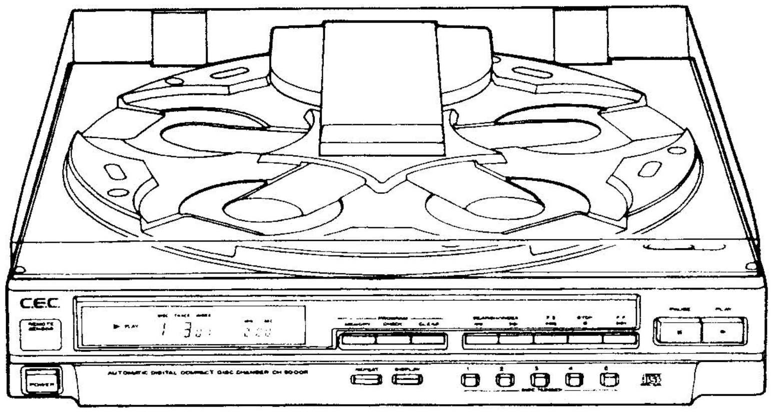
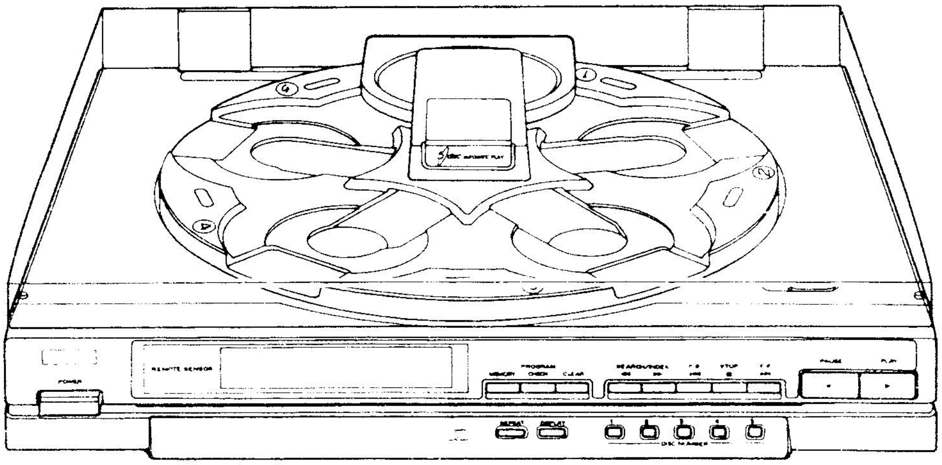
C.E.C.

DIGITAL COMPACT DISC CHANGER

CH 3000/CH 3000R
CH 5000/CH 5000R

SERVICE MANUAL





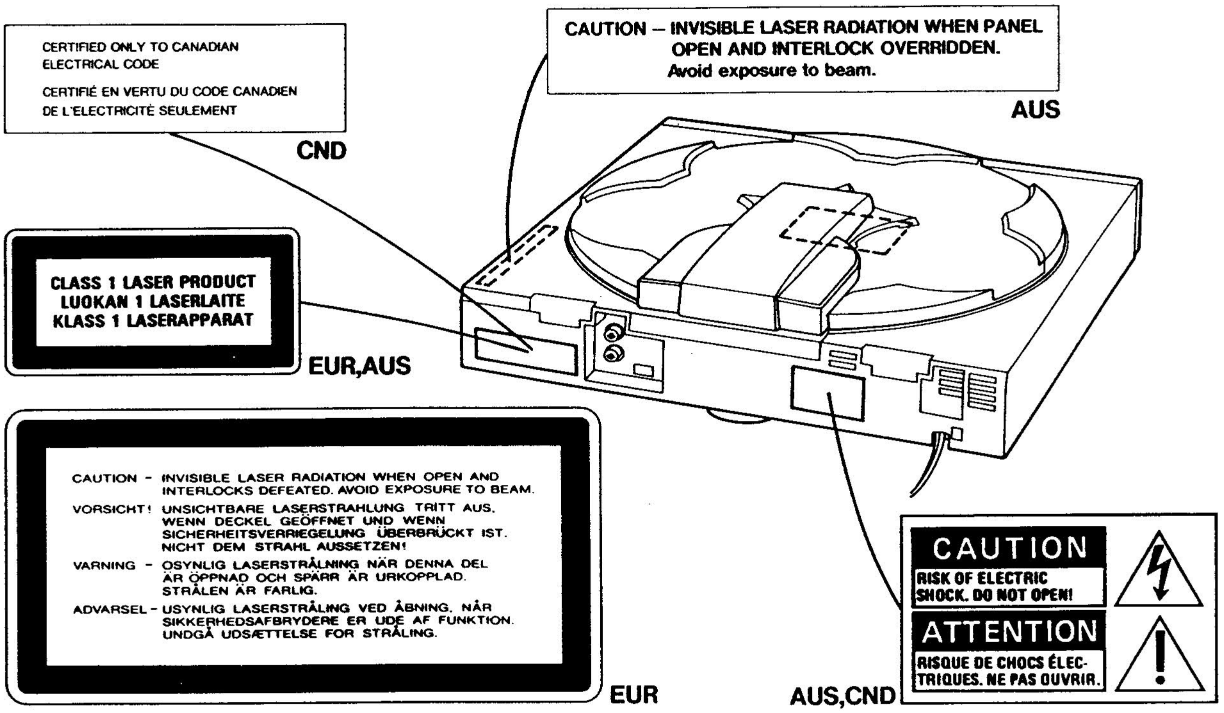
COMPACT
disc
DIGITAL AUDIO

SAFETY CERTIFICATION / CERTIFICAT DE SÉCURITÉ / SICHERHEITSBESTIMMUNGEN SÄKERHETSFÖRESKRIFTER / VEILIGHEIDSCERTIFIKAAT

This Compact Disc Changer is made and tested to meet exacting safety standards.

Laser Diode Properties
Material: Ga-Al-As
Wavelength: 755-815nm (25℃)
Laser Output: Continuous Wave max. 0.7mW

CH 3000/CH 3000R



CERTIFIED ONLY TO CANADIAN ELECTRICAL CODE

CERTIFIÉ EN VERTU DU CODE CANADIEN DE L'ELECTRICITÉ SEULEMENT

CND

CAUTION – INVISIBLE LASER RADIATION WHEN PANEL OPEN AND INTERLOCK OVERRIDDEN. Avoid exposure to beam.

AUS

CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

EUR,AUS

CAUTION – INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.

VORSICHT! UNSICHTBARE LASERSTRAHLUNG TRITT AUS, WENN DECKEL GEÖFFNET UND WENN SICHERHEITSVERRIEGELUNG ÜBERBRÜCKT IST. NICHT DEM STRAHL AUSSETZEN!

VARNING – OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRR ÄR URKOPPLAD. STRÅLEN ÄR FARLIG.

ADVARSEL – USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.

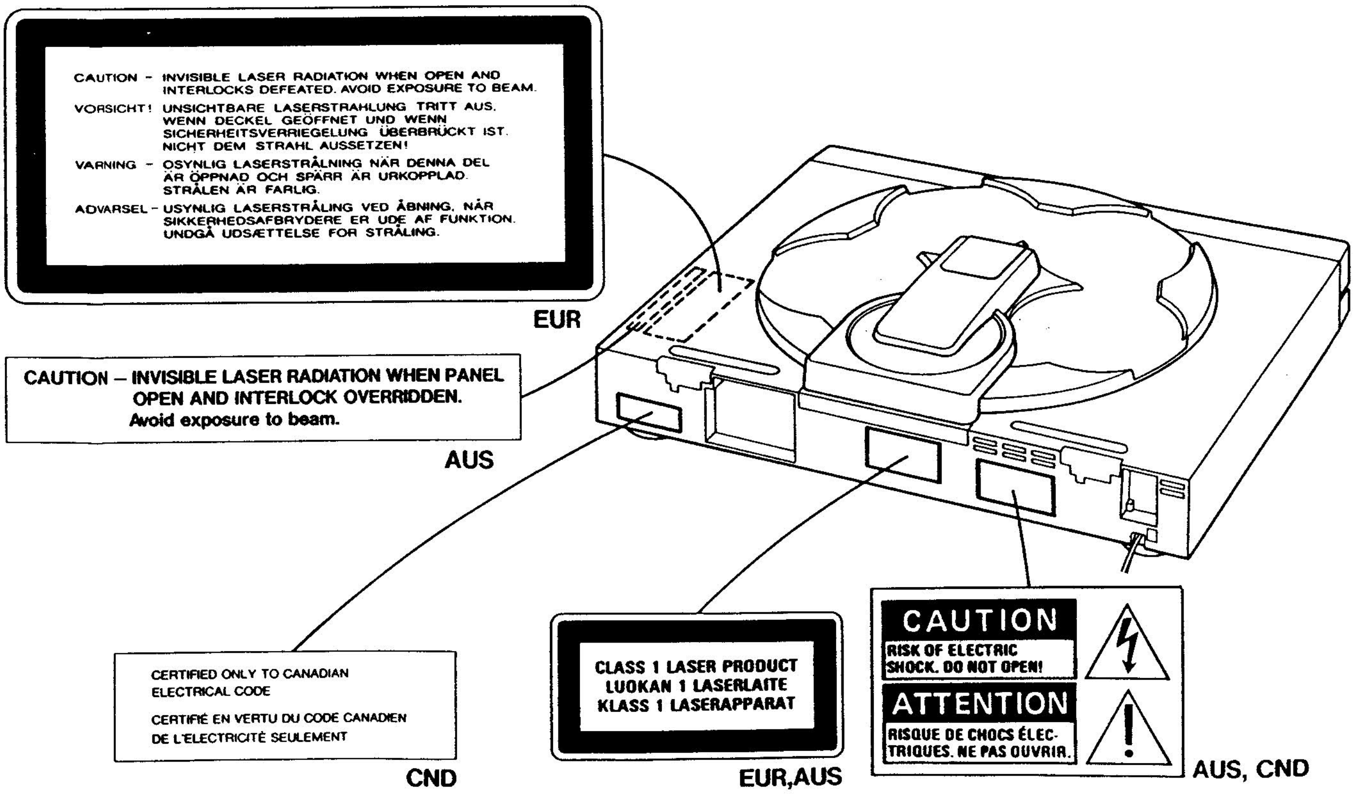
EUR

CAUTION
RISK OF ELECTRIC SHOCK. DO NOT OPEN!

ATTENTION
RISQUE DE CHOCS ÉLECTRIQUES. NE PAS OUVRIR.

AUS,CND

CH 5000/CH 5000R



CAUTION – INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.

VORSICHT! UNSICHTBARE LASERSTRAHLUNG TRITT AUS, WENN DECKEL GEÖFFNET UND WENN SICHERHEITSVERRIEGELUNG ÜBERBRÜCKT IST. NICHT DEM STRAHL AUSSETZEN!

VARNING – OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRR ÄR URKOPPLAD. STRÅLEN ÄR FARLIG.

ADVARSEL – USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.

EUR

CAUTION – INVISIBLE LASER RADIATION WHEN PANEL OPEN AND INTERLOCK OVERRIDDEN. Avoid exposure to beam.

AUS

CERTIFIED ONLY TO CANADIAN ELECTRICAL CODE

CERTIFIÉ EN VERTU DU CODE CANADIEN DE L'ELECTRICITÉ SEULEMENT

CND

CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

EUR,AUS

CAUTION
RISK OF ELECTRIC SHOCK. DO NOT OPEN!

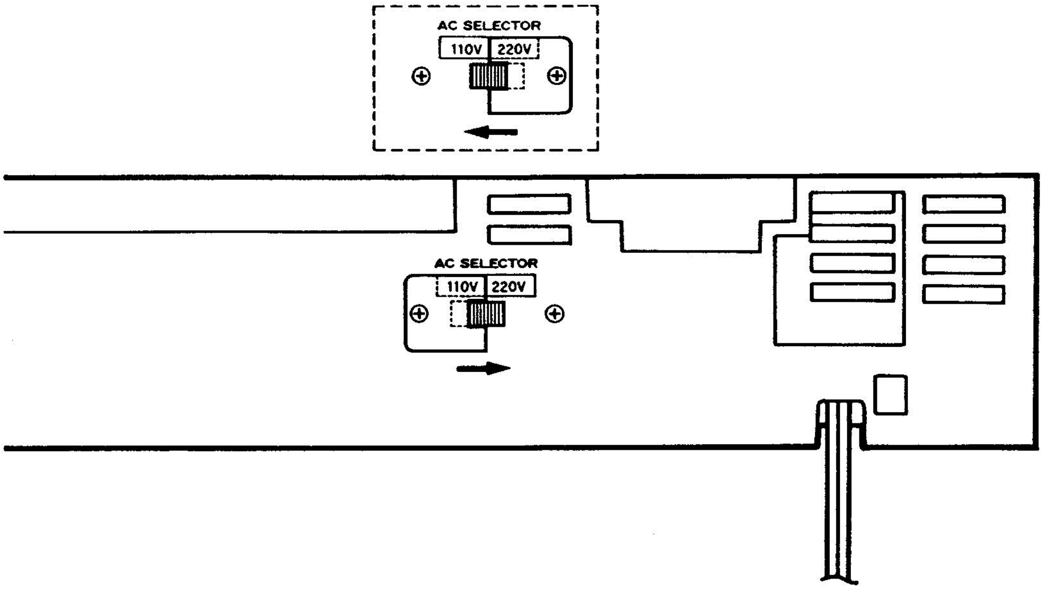
ATTENTION
RISQUE DE CHOCS ÉLECTRIQUES. NE PAS OUVRIR.

AUS, CND

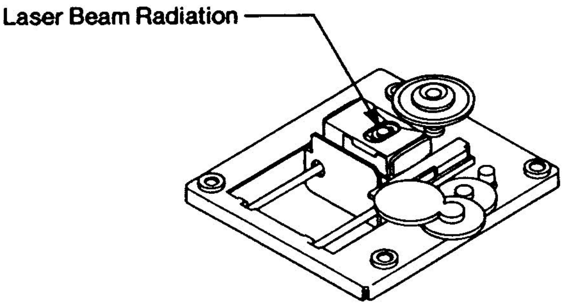
VOLTAGE CONVERSION

This unit is adjusted to operate at the electric voltage specified on the unit or packing carton.
It is necessary to change the voltage requirements of this unit to match your area, use the following procedures.

1. Disconnect the power cord from AC outlet.
2. Locate the voltage selector (AC SELECTOR) on the rear panel of the unit as shown in the illustration.
3. Remove the screw together with the plate then slide the switch to voltage requirement of your area.

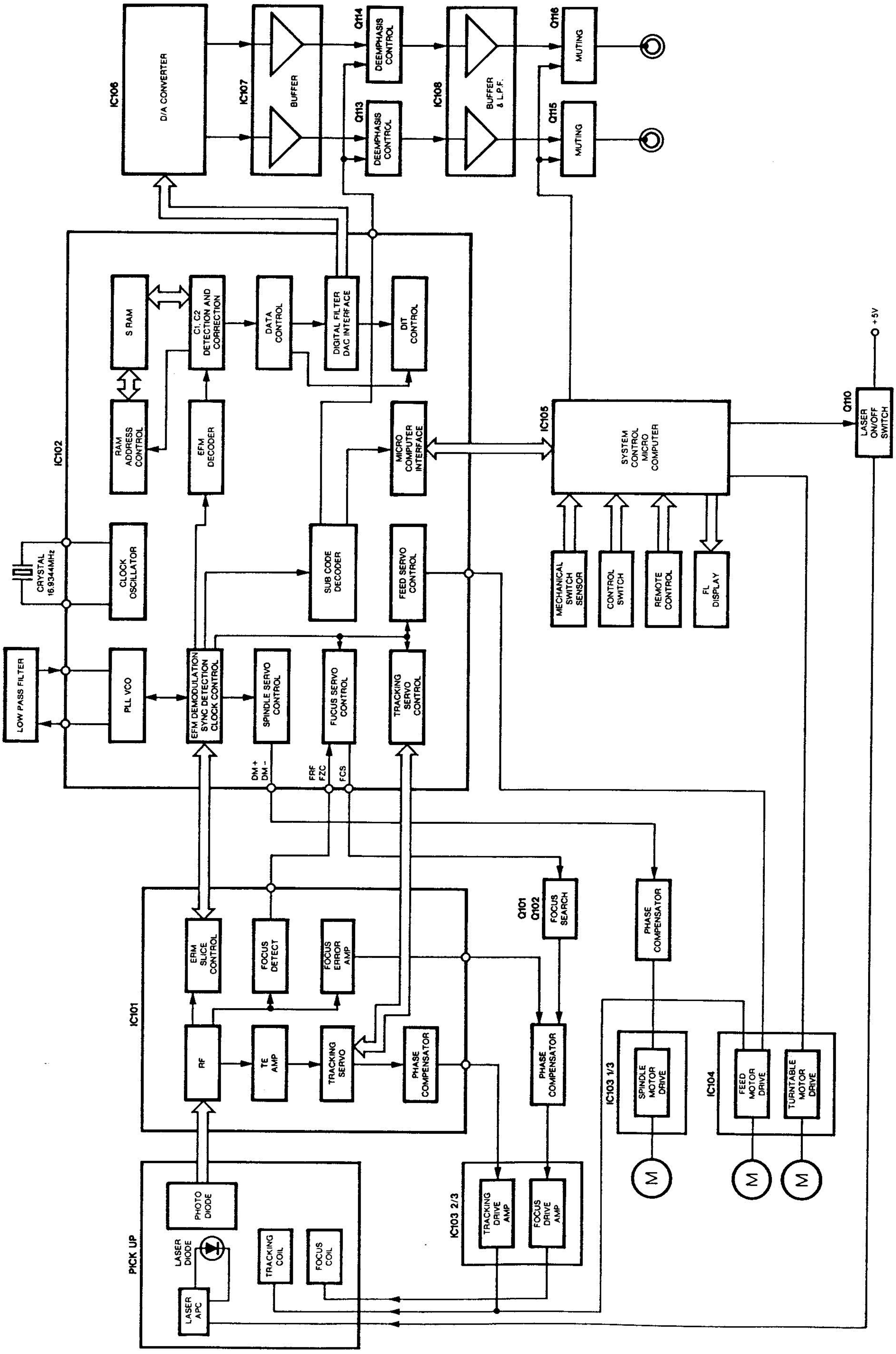


LASER BEAM RADIATION SPOT



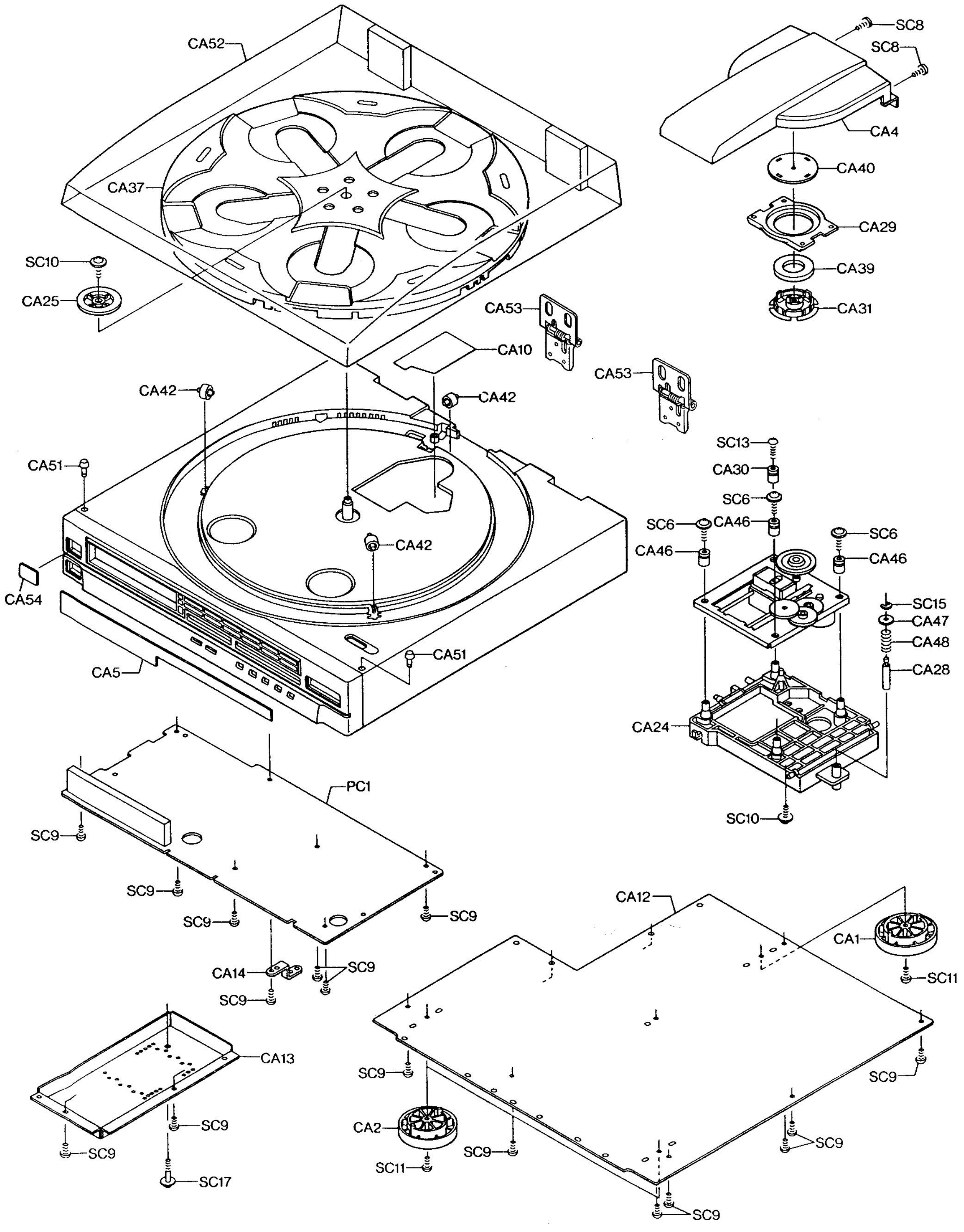
Laser Diode Properties
Material: Ga-Al-As
Wavelength: 755 – 815 nm (25°C)
Laser Output: Continuous Wave max.0.5 mW

FUNCTIONAL BLOCK DIAGRAM


IC106
D/A CONVERTER
IC107
BUFFER
Q114
DEEMPHASIS CONTROL
Q113
DEEMPHASIS CONTROL
IC108
BUFFER & L.P.F.
Q116
MUTING
Q115
MUTING
IC102
S RAM
C1, C2 DETECTION AND CORRECTION
DATA CONTROL
DIGITAL FILTER DAC INTERFACE
DIT CONTROL
RAM ADDRESS CONTROL
EFM DECODER
MICRO COMPUTER INTERFACE
IC105
SYSTEM CONTROL MICRO COMPUTER
Q110
LASER ON/OFF SWITCH
+5V
CRYSTAL 16.9344MHz
CLOCK OSCILLATOR
SUB CODE DECODER
FEED SERVO CONTROL
MECHANICAL SWITCH SENSOR
CONTROL SWITCH
REMOTE CONTROL
FL DISPLAY
LOW PASS FILTER
PLL VCO
EFM DEMODULATION SYNC DETECTION CLOCK CONTROL
SPINDLE SERVO CONTROL
FUCUS SERVO CONTROL
TRACKING SERVO CONTROL
DM +
DM -
FRF
FZC
FCS
IC101
ERM SLICE CONTROL
FOCUS DETECT
FOCUS ERROR AMP
RF
TE AMP
TRACKING SERVO
PHASE COMPENSATOR
Q101
Q102
FOCUS SEARCH
PHASE COMPENSATOR
PHASE COMPENSATOR
IC103 1/3
SPINDLE MOTOR DRIVE
IC104
FEED MOTOR DRIVE
TURNTABLE MOTOR DRIVE
M
M
M
IC103 2/3
TRACKING DRIVE AMP
FOCUS DRIVE AMP
PICK UP
PHOTO DIODE
LASER DIODE
LASER APC
TRACKING COIL
FOCUS COIL

CABINET & CHASSIS EXPLODED VIEW (1)

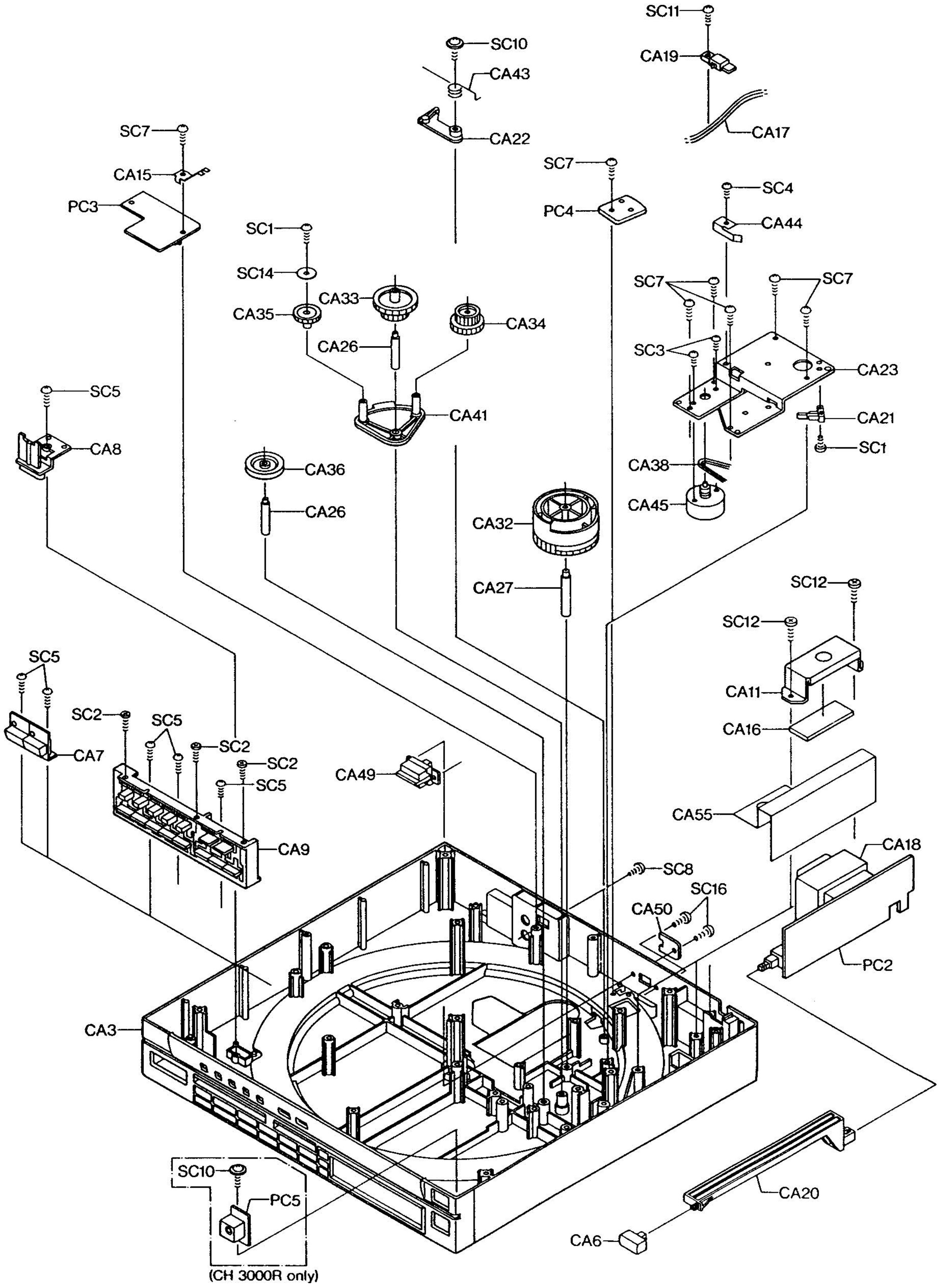
CH 3000/CH 3000R



SC8
SC8
CA52
CA4
CA40
CA37
CA29
SC10
CA39
CA25
CA53
CA31
CA10
CA53
CA42
CA42
SC13
CA51
CA30
SC6
SC6
CA46
SC6
CA46
CA46
CA42
CA54
SC15
CA47
CA48
CA51
CA5
CA28
CA24
PC1
SC10
SC9
SC9
CA12
SC9
SC9
CA1
CA14
SC9
SC11
SC9
CA13
SC9
SC9
SC9
CA2
SC9
SC9
SC11
SC9
SC17
SC9

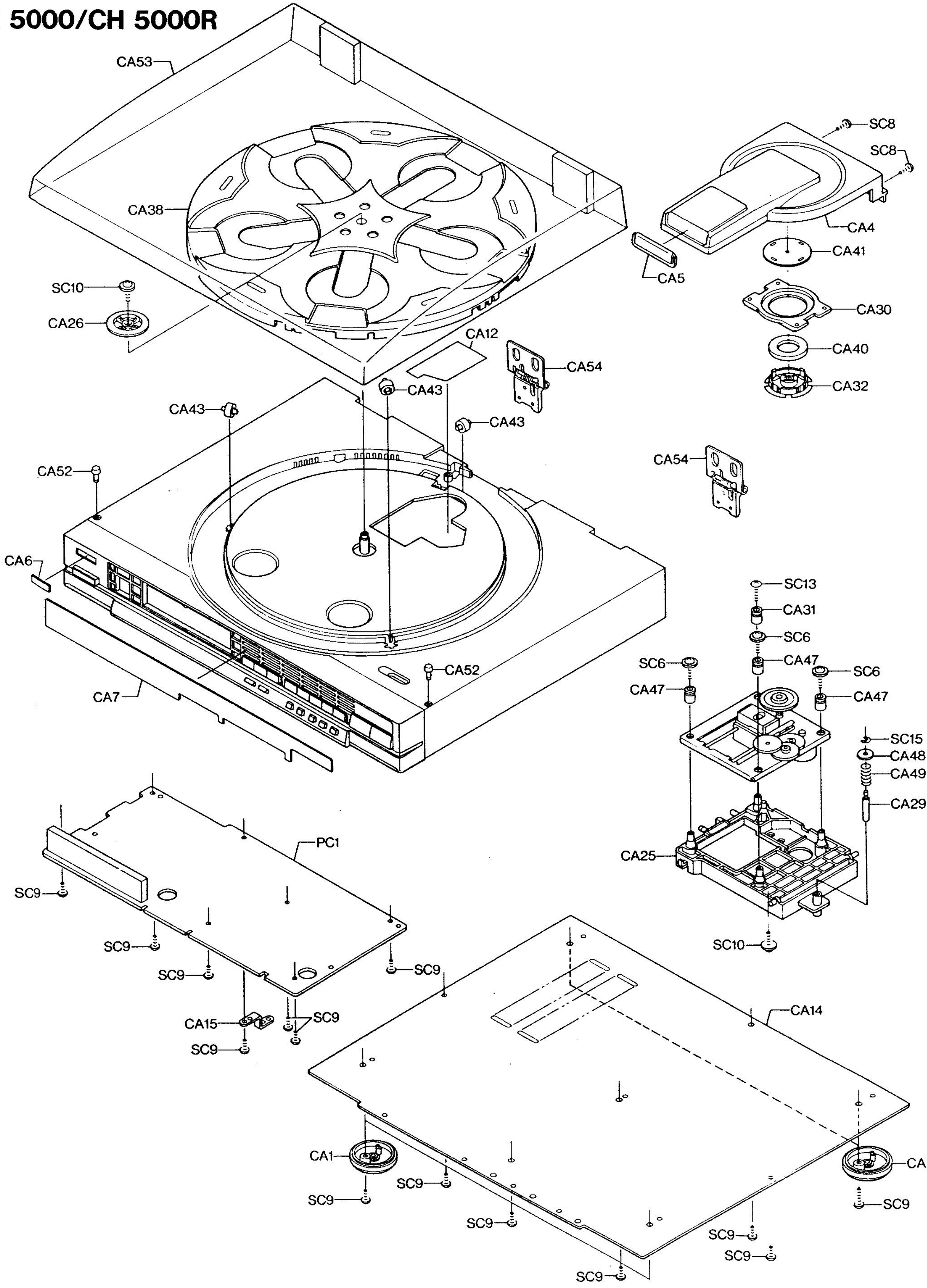
CABINET & CHASSIS EXPLODED VIEW (2)

CH 3000/CH 3000R


SC11
CA19
CA17
SC10
CA43
CA22
SC7
CA15
PC3
SC7
PC4
SC4
CA44
SC1
SC14
CA33
CA35
CA34
CA26
SC7
SC7
SC3
CA23
CA21
SC1
SC5
CA8
CA41
CA36
CA26
CA38
CA45
CA32
CA27
SC12
SC12
CA11
CA16
SC5
SC2
SC5
SC2
SC2
SC5
CA7
CA49
CA9
CA55
CA18
SC8
SC16
CA50
PC2
CA3
SC10
PC5
CA20
CA6
(CH 3000R only)

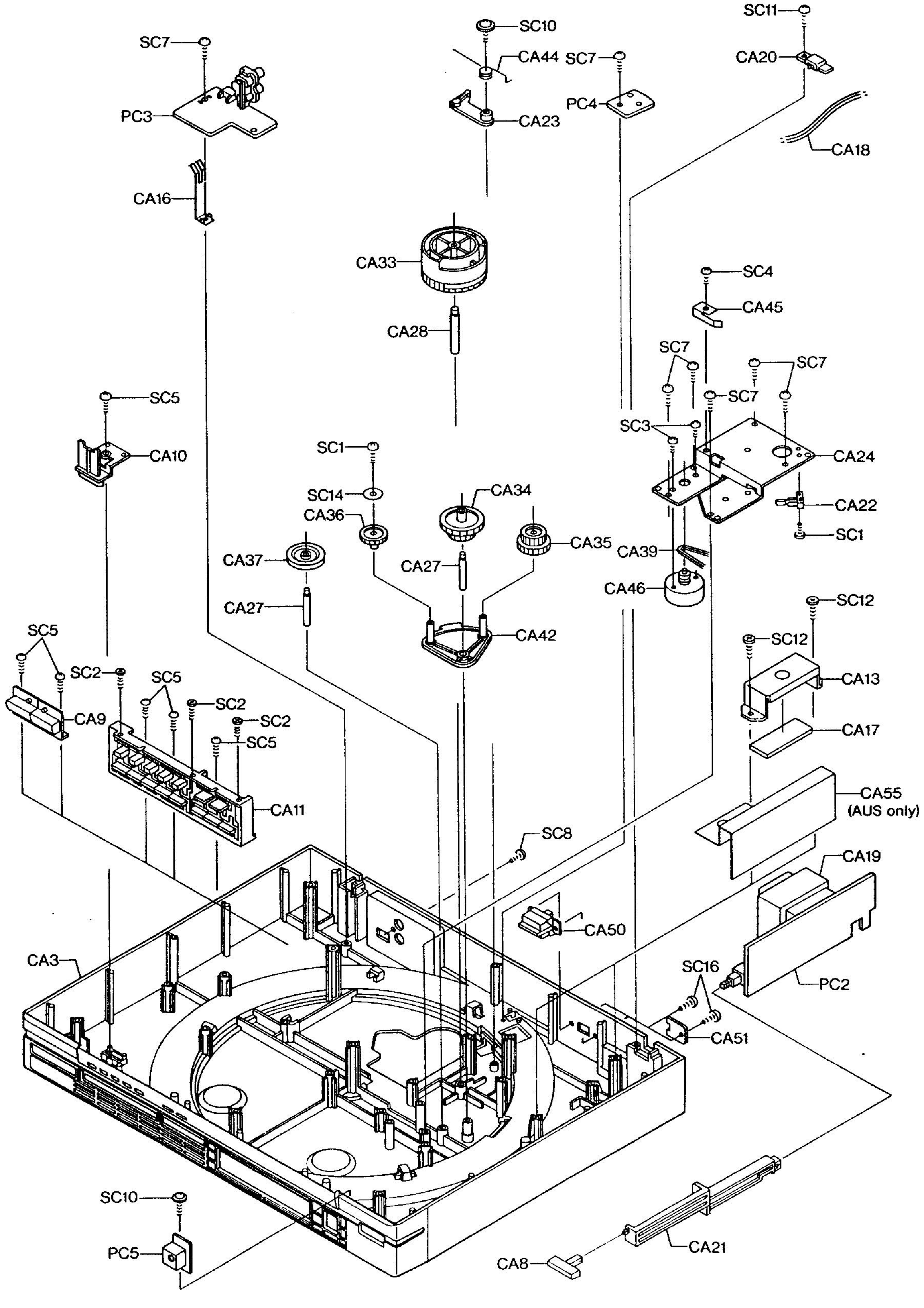
CABINET & CHASSIS EXPLODED VIEW (1)

CH 5000/CH 5000R


CA53
SC8
SC8
CA38
CA4
CA41
CA5
SC10
CA30
CA26
CA12
CA40
CA54
CA43
CA32
CA43
CA43
CA54
CA52
CA6
SC13
CA31
SC6
CA52
SC6
CA47
SC6
CA47
CA47
CA7
SC15
CA48
CA49
CA29
PC1
CA25
SC9
SC10
SC9
SC9
SC9
CA14
CA15
SC9
SC9
CA1
CA2
SC9
SC9
SC9
SC9
SC9
SC9
SC9

CABINET & CHASSIS EXPLODED VIEW (2)

CH 5000/CH 5000R


SC11
SC10
CA44
SC7
CA20
SC7
PC4
PC3
CA23
CA18
CA16
CA33
SC4
CA45
CA28
SC7
SC7
SC7
SC5
SC3
CA10
CA24
SC1
CA34
SC14
CA36
CA22
CA35
SC1
CA37
CA27
CA39
CA46
SC12
CA27
CA42
SC12
SC5
SC2
SC5
CA13
SC2
CA9
SC2
CA17
SC5
CA55
(AUS only)
CA11
SC8
CA19
CA50
CA3
SC16
PC2
CA51
SC10
PC5
CA21
CA8

CABINET PARTS LIST

Ref. No.	Part No.	Description	CH 3000		CH 3000R	
			CND	AUS	CND	EUR
		PACKAGE				
	6K410X3700	PAD, FRONT	1	1	1	1
	6K410X3800	PAD, REAR	1	1	1	1
	6K210X4200	CARTON	1	1	1	1
	6K420X2321	LABEL, BAR CODE		1		
	6K420X2322	LABEL, BAR CODE				1
	6K420X2323	LABEL, BAR CODE	1		1	
	13163069163500	PATCHING SHEET	1	1	1	1
	14162519164900	SHEET POLYETHYLENE	1	1	1	1
		ACCESSORY				
	6P100X0691	MANUAL		1		
	6P100X0692	MANUAL				1
	6P100X0693	MANUAL	1		1	
	42369741300	PLUG CORD RCA	1	1	1	1
	13162719104010	BAG FAN	1	1	1	1
	4U100X6000	REMOCON			1	1
	H32211010	CARD		1		
	H32348010	GUARANTEE CERT.		1		
		CABINET				
	6P400X3604	LABEL, RATING				1
	6P400X3605	LABEL, RATING		1		
	6P400X3606	LABEL, RATING	1			
	6P400X3607	LABEL, RATING			1	
	H48981000	STANDARD LABEL	1		1	
	14164729376460	LABEL CAUTION LASER	1		1	
	6P470X1700	LABEL, SAFETY		1		1
	14124729071000	WIRE BAND.	2	2	2	2
	1EA0J13A23400	ASSY, CONNECTOR-S, 5P	1	1	1	1
	1EA0J13A23400	ASSY, CONNECTOR-S, 6P	1	1	1	1
CA1	22510X1400	LEG	1	1	1	1
CA2	22510X1401	LEG		2		
CA2	22510X1402	LEG	2		2	2
CA3	21110X2100	CABINET		1		
CA3	21110X2101	CABINET	1			
CA3	21110X2104	CABINET				1
CA3	21110X2105	CABINET			1	
CA4	21160X0100	COVER, CD	1	1	1	1
CA5	21640X1900	WINDOW		1		
CA5	21640X1901	WINDOW	1		1	1
CA5	21640X2001	WINDOW			1	1
CA6	21740X3201	KNOB, POWER		1		
CA6	21740X3202	KNOB, POWER	1		1	1
CA7	21750X6601	BUTTON, PLAY/PAUSE		1		
CA7	21750X6602	BUTTON, PLAY/PAUSE	1		1	1
CA8	21750X6501	BUTTON, SELECT	1		1	1
CA8	21750X6502	BUTTON, SELECT		1		
CA9	21740X3000	KNOB, FUNCTION	1	1	1	1
CA10	IEA2231A00800	VEIL	1	1	1	1
CA11	IEA2321A05300	BRACKET-E, TRANS	1	1	1	1
CA12	21270X1900	PLATE, BOTTOM	1	1	1	1
CA13	21270X2000	PLATE, BOTTOM	1	1	1	1
CA14	23370X0700	TERMINAL, GND	1	1	1	1
CA15	IEA2376A03400	TERMINAL, EARTH	1	1	1	1
CA16	IEA2443A04400	CUSHION, RUBBER, TRANS	1	1	1	1

CABINET PARTS LIST (Continued)

	Ref. No.	Part No.	Description	CH 3000		CH 3000R					
				CND	AUS	CND	EUR				
⚠	CA17	42439203900	POWER CORD	1		1					
⚠	CA17	F50253010	POWER CORD		1						
⚠	CA17	42432005000	POWER CORD				1				
⚠	CA18	IEA4L50A06500	TRANS	1		1					
⚠	CA18	4L500X2360	TRANS		1						
⚠	CA18	4L500X2370	TRANS				1				
	CA19	13123608165000	CRAMP WIRE	1		1					
	CA19	13123608168000	CRAMP WIRE		1		1				
	CA20	23510X0600	SHAFT	1	1	1	1				
	CA21	42312071100	LEAF SW.	1	1	1	1				
	CA22	IEA0721A00400	ASSY, LEVER, LOCK	1	1	1	1				
	CA23	IEA2312A00300	CHASSIS, SUB	1	1	1	1				
	CA24	IEA2332A00600	BASE, CD MECHANISM	1	1	1	1				
	CA25	IEA2366A00500	STOPPER, TURNTABLE	1	1	1	1				
	CA26	IEA2372A01600	SHAFT, GEAR, LOAD	2	2	2	2				
	CA27	IEA2372A01700	SHAFT, GEAR, CAM	1	1	1	1				
	CA28	IEA2372A02200	SHAFT, DAMPER	1	1	1	1				
	CA29	IEA2413A00700	SUPPORT, DISC CRAMP	1	1	1	1				
	CA30	IEA2443A04900	CUSHION, RUBBER	1	1	1	1				
	CA31	IEA2451A03500	HOLDER, DISC	1	1	1	1				
	CA32	IEA2511A05900	GEAR, CAM	1	1	1	1				
	CA33	IEA2511A06000	GEAR, LOAD	1	1	1	1				
	CA34	IEA2511A06100	GEAR, PINION	1	1	1	1				
	CA35	IEA2511A06200	GEAR, IDLER	1	1	1	1				
	CA36	IEA2524A00800	PULLEY, GEAR	1	1	1	1				
	CA37	IEA2541A00500	TURNTABLE, CHANGER	1	1	1	1				
	CA38	IEA2563A01000	BELT, SQUARE.	1	1	1	1				
	CA39	IEA2641A01300	MAGNET, DISC, CLAMP	1	1	1	1				
	CA40	IEA2642A00500	YOKE, MAGNET	1	1	1	1				
	CA41	IEA2721A02900	LEVER, CHANGE	1	1	1	1				
	CA42	IEA2751A00300	ROLLER, T.T	3	3	3	3				
	CA43	IEA2813A03300	SPRING, LEVER LOCK	1	1	1	1				
	CA44	IEA2814A02700	SPRING, PLATE	1	1	1	1				
	CA45	IEA4M10A01600	MOTOR, 6.0V	1	1	1	1				
	CA46	14124459467000	CUSHION RUBBER	3	3	3	3				
	CA47	14124539085000	WASHER	1	1	1	1				
	CA48	14128529495000	SPRING DAMPER	1	1	1	1				
⚠	CA49	42312026500	SW, SLIDE				1				
	CA50	13127104005000	PLATE PAD SWITCH				1				
	CA51	D50040010	PAD LID	2	2	2	2				
	CA52	D21146000	LID	1	1	1	1				
	CA53	K49326000	HINGE ASSY	2	2	2	2				
	CA54	21640X2000	WINDOW	1	1						
	CA54	21640X2001	WINDOW			1	1				
	CA55	24620X5000	SHEET	1	1	1	1				
			PCB								
	PC1	0B100X6810	ASSY, PCB, MAIN	1	1						
	PC1	0B100X6811	ASSY, PCB, MAIN			1	1				
	PC2	0B100X6820	ASSY, PCB, POWER		1						
	PC2	0B100X6821	ASSY, PCB, POWER	1		1					
	PC2	0B100X6823	ASSY, PCB, POWER				1				
	PC3	0B100X6830	ASSY, PCB, OUTPUT	1	1	1	1				
	PC4	0B100X6840	ASSY, PCB, INTERRUPT	1	1	1	1				
	PC5	0B100X6850	ASSY, PCB, REMOCON			1	1				

CABINET PARTS LIST (Continued)

Ref. No.	Part No.	Description	CH 3000		CH 3000R					
			CND	AUS	CND	EUR				
		SCREW								
SC1	SFBDN205R0SE-	SCR S-TPG BIN 2×5	2	2	2	2				
SC2	SFBDN208R0SE-	SCR S-TPG BIN 2×8	3	3	3	3				
SC3	SM2PN262R0SE-	SCR PAN 2.6×2	2	2	2	2				
SC4	SFBPN266R0SE-	SCR S-TPG PAN 2.6×6	1	1	1	1				
SC5	SFBPN268R0SE-	SCR S-TPG PAN 2.6×8	6	6	7	6				
SC6	14124219448000	+BRTS-B M2.6×14 SEMS	3	3	3	3				
SC7	SFBAN308R0SE-	SCR S-TPG BRZ 3×8	7	7	7	7				
SC8	SFBDN308R0SM-	SCR S-TPG BIN 3×8	3	3	3	3				
SC9	SFBAN30100SE-	SCR S-TPG BRZ 3×10	16	16	16	16				
SC10	13124201283000	SCREWP (B TITE SEMS)	3	3	4	4				
SC11	SFBAN30120SE-	SCR S-TPG BRZ 3×12	4	4	4	4				
SC12	SFBDN35100SE-	SCR S-TPG BIN 3.5×10	2	2	2	2				
SC13	STXEA00300---	SPECIAL SCREW	1	1	1	1				
SC14	SWXEA09300---	SPECIAL WASHER	1	1	1	1				
SC15	SCRET20SE----	RING E 2	1	1	1	1				
SC16	SM2PN308R0SM-	PAN 3×8				2				
SC17	13424106270620	SHAFT	1	1	1	1				

CABINET PARTS LIST (Continued)

Ref. No.	Part No.	Description	CH 5000			CH 5000R				
			CND	EUR	AUS	JPN	CND	EUR	AUS	
		PACKAGE								
	6K210X3700	CARTON	1	1	1	1	1	1	1	
	IEA6K41A07500	PAD, FRONT	1	1	1	1	1	1	1	
	IEA6K41A07600	PAD, REAR	1	1	1	1	1	1	1	
	13163069163500	PATCHING SHEET	1	1	1	1	1	1	1	
	14162519164900	SHEET POLYETHYLENE	1	1	1	1	1	1	1	
	6P420X2314	LABEL, BAR CODE	1							
	6P420X2312	LABEL, BAR CODE		1						
	6P420X2311	LABEL, BAR CODE			1					
	6P420X2328	LABEL, BAR CODE				1				
	6P420X2315	LABEL, BAR CODE					1			
	6P420X2313	LABEL, BAR CODE						1		
	6P420X2327	LABEL, BAR CODE							1	
	6K420X4700	PAD	1	1	1	1	1	1	1	
		ACCESSORIES								
	42369741300	PLUG CORD RCA	1	1	1	1	1	1	1	
	13162719104010	BAG FAN	1	1	1	1	1	1	1	
	13164159402000	NOTES		1				1		
	6P100X0684	MANUAL	1				1			
	6P100X0670	MANUAL		1				1		
	6P100X0666	MANUAL			1				1	
	6P100X0701	MANUAL				1				
	H32348010	GUARANTEE CERT.			1				1	
	6P300X4500	GUARANTEE CERT.				1				
	H32211010	CARD			1				1	
	4U100X0600	REMOCON				1	1	1		
	4U100X0604	REMOCON							1	
		CABINET								
	6P400X3006	LABEL, RATING	1							
	6P400X3805	LABEL, RATING		1						
	6P400X3112	LABEL, RATING			1					
	6P400X3900	LABEL, RATING				1				
	6P400X3007	LABEL, RATING					1			
	6P400X3806	LABEL, RATING						1		
	6P400X3121	LABEL, RATING							1	
	IEA2461A06800	ADHESIVE SHEET	1	1	1	1	1	1	1	
	H48981000	STANDARD LABEL	1				1			
	6P430X2200	LABEL, CAUTION			1				1	
	14124729071000	WIRE BAND	2	4	2	2	2	4	2	
	IEA0J13A23400	ASSY, CONNECTOR-S,5P	1	1	1	1	1	1	1	
	IEA0J13A23500	ASSY, CONNECTOR-S,6P	1	1	1	1	1	1	1	
CA1	D49855000	LEG	2	2	2	2	2	2	2	
CA2	D49855010	LEG	2	2	2	2	2	2	2	
CA3	21110X2007	CABINET	1			1	1			
CA3	21110X2000	CABINET		1				1		
CA3	21110X2001	CABINET			1				1	
CA4	IEA212A05300	COVER, CD	1	1	1	1	1	1	1	
CA5	21440X2004	DECORATION, PLATE	1	1		1	1	1		
CA5	21440X2005	DECORATION, PLATE			1				1	
CA6	21630X1600	BADGE	1	1		1	1	1		
CA6	21630X1601	BADGE			1				1	
CA7	21640X1800	WINDOW	1	1						
CA7	21640X1805	WINDOW			1					
CA7	21640X1801	WINDOW				1	1	1		

CABINET PARTS LIST (Continued)

Ref. No.	Part No.	Description	CH 5000			CH 5000R				
			CND	EUR	AUS	JPN	CND	EUR	AUS	
CA7	21640X1807	WINDOW							1	
CA8	D49586500	KNOR POWER	1	1	1	1	1	1	1	
CA9	21740X3100	KNOB, PLAY/PAUSE	1	1		1	1	1		
CA9	21740X3101	KNOB, PLAY/PAUSE			1				1	
CA10	21750X6501	BUTTON, SELECT	1	1		1	1	1		
CA10	21750X6502	BUTTON, SELECT			1				1	
CA11	21740X3000	KNOB, FUNCTION	1	1	1	1	1	1	1	
CA12	IEA2231A00800	VEIL	1	1	1	1	1	1	1	
CA13	IEA2321A05300	BRACKET-E, TRANS	1	1	1	1	1	1	1	
CA14	IEA2336A02800	PLATE, BOTTOM	1	1	1	1	1	1	1	
CA15	IEA2376A02500	TERMINAL, GND	1	1	1	1	1	1	1	
CA16	IEA2376A03400	TERMINAL, EARTH	1	1	1	1	1	1	1	
CA17	IEA2443A04400	CUSHION, RUBBER, TRANS	1	1	1	1	1	1	1	
⚠ CA18	42439203900	POWER CORD	1				1			
⚠ CA18	42432005000	POWER CORD		1				1		
⚠ CA18	F50253010	POWER CORD			1				1	
⚠ CA18	42432003800	POWER CORD				1				
⚠ CA19	IEA4L50A06500	TRANS	1				1			
⚠ CA19	4L500X2300	TRANS				1				
⚠ CA19	4L500X2370	TRANS		1				1		
⚠ CA19	4L500X2360	TRANS			1				1	
CA20	13123608165000	CRAMP WIRE	1			1	1			
CA20	13123608168000	CRAMP WIRE		1	1			1	1	
CA21	D32299000	SHAFT	1	1	1	1	1	1	1	
CA22	42312071100	LEAF SW	1	1	1	1	1	1	1	
CA23	IEA0721A00400	ASSY, LEVER, LOCK	1	1	1	1	1	1	1	
CA24	IEA2312A00300	CHASSIS, SUB	1	1	1	1	1	1	1	
CA25	IEA2332A00600	BASE, CD MECHANISM	1	1	1	1	1	1	1	
CA26	IEA2366A00500	STOPPER, TURNTABLE	1	1	1	1	1	1	1	
CA27	IEA2372A01600	SHAFT, GEAR, LOAD	2	2	2	2	2	2	2	
CA28	IEA2372A01700	SHAFT, GEAR, CAM	1	1	1	1	1	1	1	
CA29	IEA2372A02200	SHAFT, DAMPER	1	1	1	1	1	1	1	
CA30	IEA2413A00700	SUPPORT, DISC, CRAMP	1	1	1	1	1	1	1	
CA31	IEA2443A04900	CUSHION, RUBBER	1	1	1	1	1	1	1	
CA32	IEA2451A03500	HOLDER, DISC	1	1	1	1	1	1	1	
CA33	IEA2511A05900	GEAR, CAM	1	1	1	1	1	1	1	
CA34	IEA2511A06000	GEAR, LOAD	1	1	1	1	1	1	1	
CA35	IEA2511A06100	GEAR, PINION	1	1	1	1	1	1	1	
CA36	IEA2511A06200	GEAR, IDLER	1	1	1	1	1	1	1	
CA37	IEA2524A00800	PULLEY, GEAR	1	1	1	1	1	1	1	
CA38	IEA2541A00500	TURNTABLE, CHANGER	1	1	1	1	1	1	1	
CA39	IEA2563A01000	BELT, SQUARE	1	1	1	1	1	1	1	
CA40	IEA2641A01300	MAGNET, DISC CLAMP	1	1	1	1	1	1	1	
CA41	IEA2642A00500	YOKE, MAGNET	1	1	1	1	1	1	1	
CA42	IEA2721A02900	LEVER, CHANGER	1	1	1	1	1	1	1	
CA43	IEA2751A00300	ROLLER, T.T	3	3	3	3	3	3	3	
CA44	IEA2813A03300	SPRING, LEVER LOCK	1	1	1	1	1	1	1	
CA45	IEA2814A02700	SPRING, PLATE	1	1	1	1	1	1	1	
CA46	IEA4M10A01600	MOTOR, 6.0V	1	1	1	1	1	1	1	
CA47	14124459467000	CUSHION RUBBER	3	3	3	3	3	3	3	
CA48	14124539085000	WASHER	1	1	1	1	1	1	1	
CA49	14128529495000	SPRING DAMPER	1	1	1	1	1	1	1	
⚠ CA50	42312026500	SW, SLIDE		1				1		
CA51	13127104005000	PLATE PAD SWITCH		1				1		
CA52	13122904134010	PAD LID	2	2	2	2	2	2	2	
CA53	D21178000	LID	1	1	1	1	1	1	1	

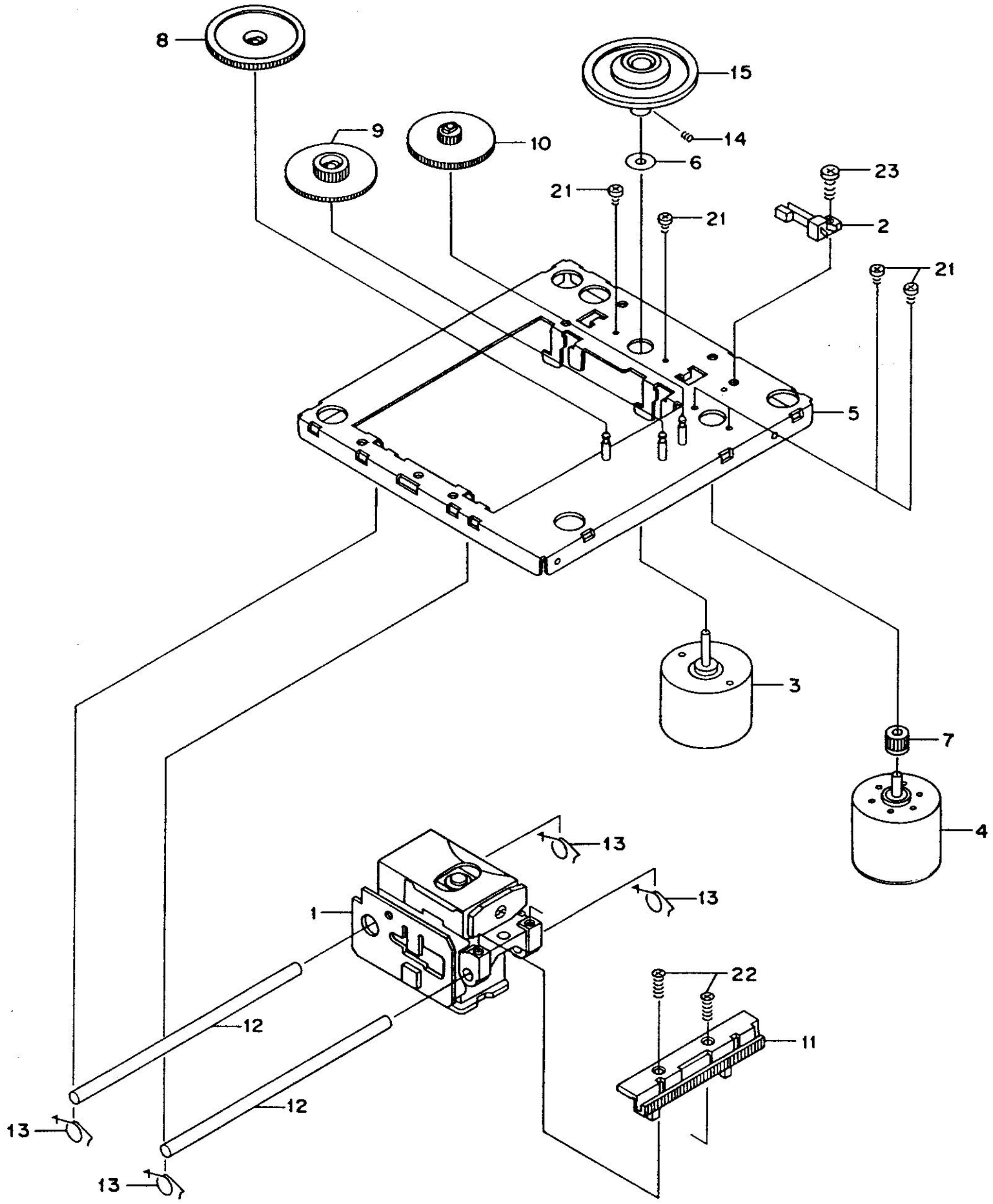
CABINET PARTS LIST (Continued)

Ref. No.	Part No.	Description	CH 5000			CH 5000R				
			CND	EUR	AUS	JPN	CND	EUR	AUS	
CA54	K49326010	HINGE ASSY	2	2	2	2	2	2	2	
CA55	24620X5000	SHEET	1	1	1	1	1	1	1	
		PCB								
PC1	0B100X6810	ASSY, PCB, MAIN	1	1	1					
PC1	0B100X6811	ASSY, PCB, MAIN					1	1	1	
PC1	0B100X6814	ASSY, PCB, MAIN				1				
PC2	0B100X6821	ASSY, PCB, POWER	1				1			
PC2	0B100X6823	ASSY, PCB, POWER		1				1		
PC2	0B100X6820	ASSY, PCB, POWER			1				1	
PC2	0B100X6822	ASSY, PCB, POWER				1				
PC3	0B100X6830	ASSY, PCB, OUTPUT	1	1	1		1	1	1	
PC3	0B100X6832	ASSY, PCB, OUTPUT				1				
PC4	0B100X6840	ASSY, PCB, INTERRUPT	1	1	1	1	1	1	1	
PC5	0B100X6850	ASSY, PCB, REMOCON				1	1	1	1	
		SCREW								
SC1	SFBDN205R0SE-	SCR S-TPG BIN 2×5	2	2	2	2	2	2	2	
SC2	SFBDN208R0SE-	SCR S-TPG BIN 2×8	3	3	3	3	3	3	3	
SC3	SM2PN262R0SE-	SCR PAN 2.6×2	2	2	2	2	2	2	2	
SC4	SFBPN266R0SE-	SCR S-TPG PAN 2.6×6	1	1	1	1	1	1	1	
SC5	SFBPN268R0SE-	SCR S-TPG PAN 2.6×8	6	6	6	6	6	6	6	
SC6	14124219448000	+BRTS-B M2.6×14 SEMS	3	3	3	3	3	3	3	
SC7	SFBAN308R0SE-	SCR S-TPG BRZ 3×8	7	7	7	7	7	7	7	
SC8	SFBDN308R0SM-	SCR S-TPG BIN 3×8	3	3	3	4	3	3	3	
SC9	SFBAN30100SE-	SCR S-TPG BRZ 3×10	16	16	16	16	16	16	16	
SC10	13124201283000	SCREW (B TITE SEMS)	3	3	3	4	4	4	4	
SC11	SFBAN30120SE-	SCR S-TPG BRZ 3×12	1	1	1	1	1	1	1	
SC12	SFBDN35100SE-	SCR S-TPG BIN 3.5×10	2	2	2	2	2	2	2	
SC13	STXEA00300---	SPECIAL SCREW	1	1	1	1	1	1	1	
SC14	SWXEA09300---	SPECIAL WASHER	1	1	1	1	1	1	1	
SC15	SCRET20SE----	RING E 2	1	1	1	1	1	1	1	
SC16	SM2PN308R0SM-	SCR PAN 3×8		2				2		

PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol ⚠ in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with ⚠, use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual.
Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

CD MECHANISM EXPLODED VIEW



CD MECHANISM PARTS LIST

Ref. No.	Part No.	Description	Q'ty
		MECHANISM	
1	1EA0A41A01300	ASSY, PICKUP, LASER, 90	1
2	42319718650	LEAF SWITCH (INNER SW)	1
3	45279718200	MOTOR (SPINDLE)	1
4	45279717600	MOTOR (FEED)	1
5	14103119305000	CHASSIS ASSY	1
6	14124539143000	WASHER M1.9 × 7.0 × 0.25	1
7	14125519668000	GEAR MOTOR	1
8	14125519830000	GEAR PINION	1
9	14125519831000	GEAR LOAD B	1
10	14125519832000	GEAR LOAD S	1
11	14125519833000	GEAR RACK	1
12	14127519890000	SHAFT PICKUP	2
13	1EA2813A00400	SPRING, TORSION	4
14	14124219367000	SET SCREW V-CONE 2 × 4	1
15	14105229003000	TURNTABLE ASSY	1
21	SE3PN172R5SA-	SCR PAN PCS 1.7 × 2.5	4
22	SE1FN205R0SA-	SCR FLT PCS 2 × 5	2
23	SFCPN266R0SE-	SCR S-TPG PAN 2.6 × 6	1

DISASSEMBLY INSTRUCITONS

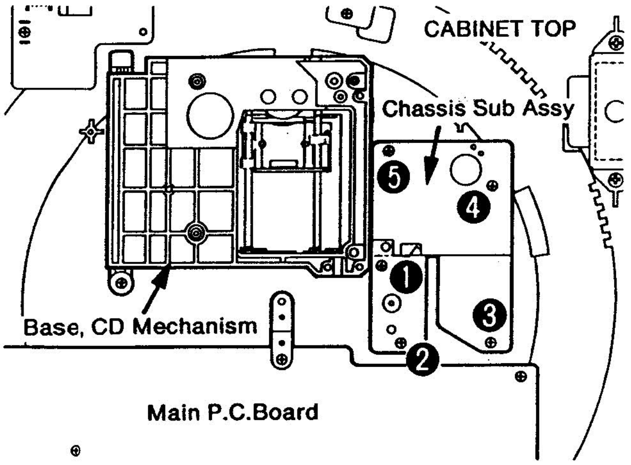
GENERAL REMARKS

- Before disassembling the until, spread a soft rubber mat or a cloth on the workbench to avoid scratches and grease stains.
- Do not use a material which is likely to cause static electricity because transistors and ICs may be easily damaged by it.
- Reassemble the unit, noting the kinds of screws, the soldering and arrangement of the leads. Refer to "Circuit Diagram and Exploded Views" for correct assembly.
- Reassemble in reverse order.

CHASSIS SUB ASSY REMOVAL

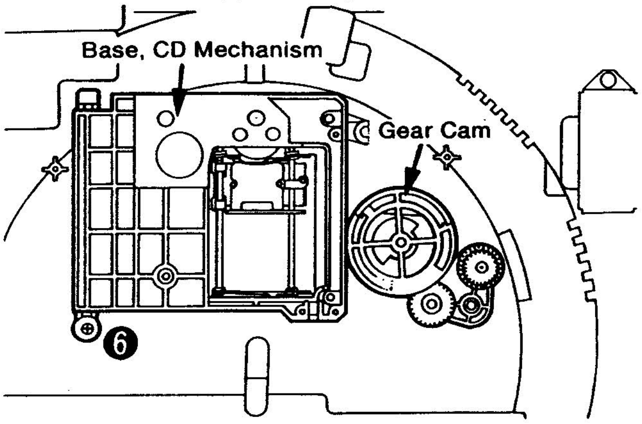
1. Turn the unit over on a clean soft surface.
2. Remove the screws from the Plate Bottom and detach the Plate Bottom from the unit .
3. Remove the five screws (1 ~ 5) fastening the Chassis Sub Assy to the Cabinet Top.
4. When installing the Chassis Sub Assy, fix it by screws in numerical order.

   Reassemble in reverse order.

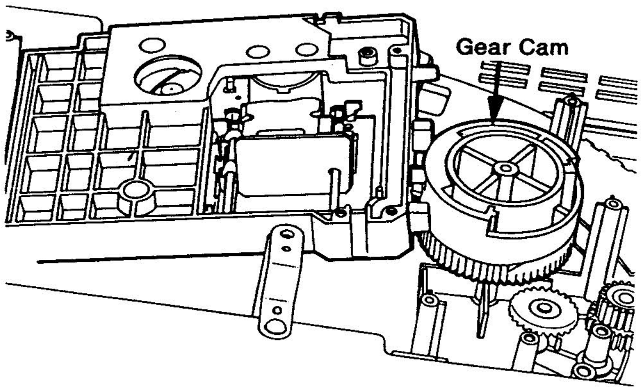

CABINET TOP
Chassis Sub Assy
❺
❹
❶
❸
❷
Base, CD Mechanism
Main P.C.Board

BASE, CD MECHANISM REMOVAL

1. Remove the Chassis Sub Assy by following the instructions for it.
2. Remove the screw (6) fastening the Base CD Mechanism.

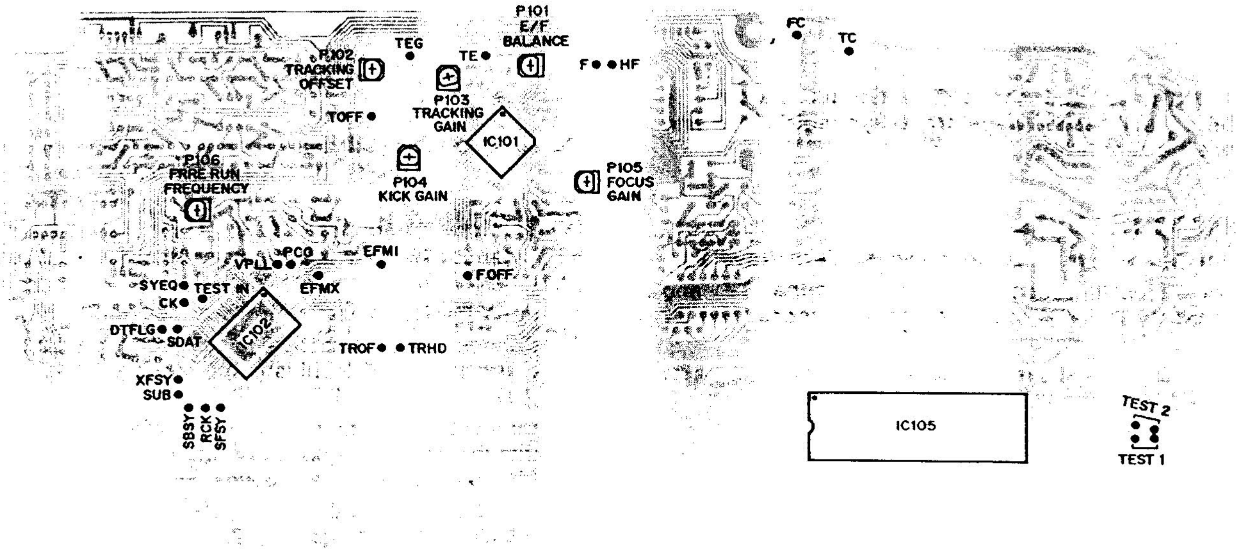

Base, CD Mechanism
Gear Cam
❻

3. Remove the Base CD Mechanism taking out the movable boss from the up and down movable grove on the side of the Gear Cam.
4. Reassemble in reverse order.



CD PLAYER ADJUSTMENT POINTS

(BOTTOM VIEW)


P101
E/F
BALANCE
TEG
TE
P102
TRACKING
OFFSET
F
HF
FC
TC
P103
TRACKING
GAIN
TOFF
IC101
P106
PRRE.RUN
FREQUENCY
P104
KICK GAIN
P105
FOCUS
GAIN
PCO
EFMI
VPLL
FOFF
SYEQ
TEST IN
EFMX
CK
DTFLG
SDAT
IC102
TROF
TRHD
XFSY
SUB
SBSY
RCK
SFSY
IC105
TEST 2
TEST 1

CD PLAYER ADJUSTMENT PROCEDURES

BEFORE CHECKING OR ADJUSTING CD PLAYER

1. Procedures for all adjustments for the CD player from start to finish are described below.
2. If no problems are found after each item is checked when the pick-up is replaced, there is no need to adjust all items again.

SETTING OF INITIAL POSITION OF VOLUME

1. Set the variable resistors to the initial positions listed below:

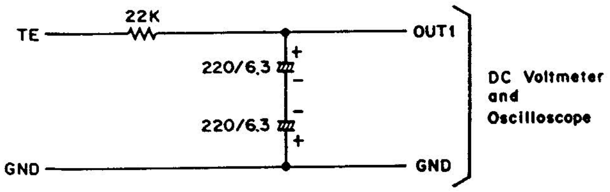
P101 (E/F BALANCE)	Mechanical Center
P102 (TRACKING OFFSET)	Mechanical Center
P103 (TRACKING GAIN)	Mechanical Center
P106 (FREE RUN FREQUENCY)	Mechanical Center

PLL (VCO) FREE RUN FREQUENCY ADJUSTMENT

1. Connect the frequency counter between the **VCO** test terminal **CK** and to **GND.** (Use a 10:1 Probe)
2. Push the POWER button to switch the power on and push the STOP button.
3. Adjust the P106 until the frequency counter indicator reads 4.32MHz ~ 4.33MHz.

E/F BALANCE ADJUSTMENT

1. Short the both test terminal **TEST1** on the Main P.C.Board to the TEST mode.
2. Short the test terminal **TOFF** to **GND** to turn tracking servo OFF.
3. Place the test disc (Modern Wave Ⅱ) on the Disc Tray, and play the fourth item on the disc.
4. Connect a DC Voltmeter and an oscilloscope via the low pass filter like that shown in the illustration below to the test terminal **TE** (tracking error).



Measurement Circuit

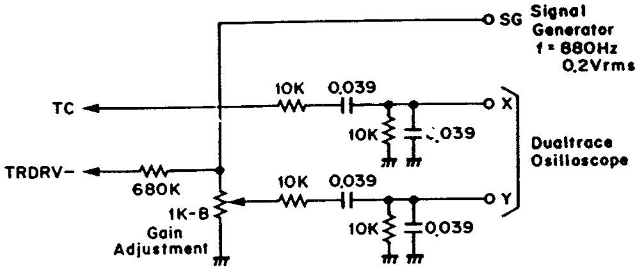
5. Adjust P101 so that the DC Voltmeter reading is 0V±50mV (oscilloscope waveform is symmetric to + and − about the zero level).

CONFIRMING TE LEVEL

1. PLAY the fourth item on the test disc (Modern Wave Ⅱ).
2. Connect an oscilloscope to the test terminal **TE**, and check that its **TE** level is in the range at more than 2V (P-P).
3. If the results of the above procedure are not satisfactory, the Pick-up is damaged.

TRACKING GAIN ADJUSTMENT

The measurement circuit diagrammed below must be used in order to adjust tracking gain correctly.



Measurement Circuit

1. Apply P103 to the position of Mechanical center position, and place the test disc (Modern Wave Ⅱ) on the Disc Tray.
2. Connect the measurement circuit described in the last section to the test terminal **TC** (tracking coil) and **TRDRV** − (minus). (Use 680kΩ Resistor)
3. Push the POWER button to switch the power on and PLAY the first item on the test disc. Now apply a signal of 880Hz and 0.2Vp-p from the signal generator to the measurement circuit.
4. Set the oscilloscope to X-Y operation, and while observing the lissajous waveform adjust P103 to the point where the phase difference is 90° as shown in Fig. 1 above.

NOTE:
If these two adjustments are performed, the TRACKING OFFSET must also be adjusted.

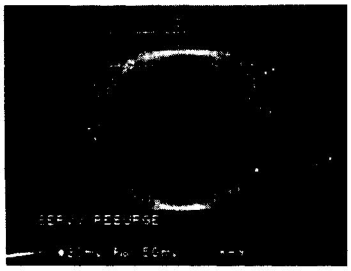


Fig 1.

CONFIRMING HF LEVEL & 3T JITTER VALUE

If no jitter counter is available, this check does not have to be performed.

1. PLAY the fourth item on the test disc (Modern Wave Ⅱ).
2. Connect an oscilloscope to the test terminal **EFMI** and check that its **HF** level is in the range 2.0Vp-p ~ 3.3Vp-p. (Use a 10 :1 Probe)
3. Connect a jitter counter to test terminal **EFMI** and check that the 3T jitter value is less than 25ns.
(Window width:600ns ~ 850ns, Set Level:2.5V)
4. Now PLAY the tenth item on the test disc and check that the jitter value is less than 25ns again.

CD PLAYER ADJUSTMENT PROCEDURES (Continued)

TRACKING OFFSET ADJUSTMENT

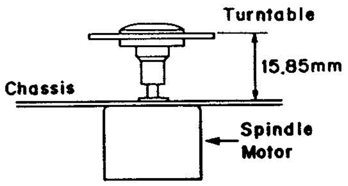
1. Push the POWER button to switch the power on and push the STOP button.
2. Connect a DC Voltmeter to the test terminal **TC** (tracking coil) and short the test terminal **TROF** to **GND.**
3. In this condition check that the DC Voltmeter indicator is in the range 100mV ± 20mV, and adjust P102 if it is not.

NOTE:
Perform this adjustment once again after adjusting the E/F BALANCE and TRACKING GAIN signals.

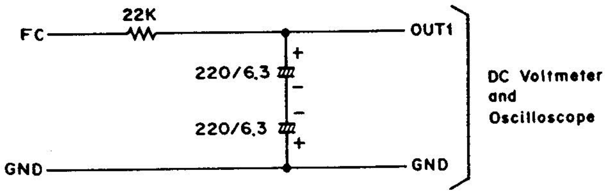
TURNTABLE HEIGHT ADJUSTMENT

This adjustment must be performed when the Spindle Motor is replaced.

1. The turntable should be mounted so that its upper surface is 15.85mm ± 0.1mm above the surface of the chassis.



2. Place the test disc (Modern Wave Ⅱ) on the turntable.
3. Connect a DC Voltmeter and an oscilloscope via the low-pass filter shown below to test terminal **FC.**



Measurement Circuit

4. Push the POWER button to switch the power on and PLAY the First and Last Track No. on the disc.
5. If the DC Voltmeter reading is not in the ranges 0V ± 0.2V for inner tracks and 0V ± 0.35V for outer tracks, then the turntable height must be readjusted. Raise the turntable higher if the DC Voltmeter indicator is on the plus (+) side, and lower it if it is on the minus (−) side.
(With this circuit 1V represents movement of approximately 0.55mm ~ 0.65mm.)

SAFETY INTERLOCK

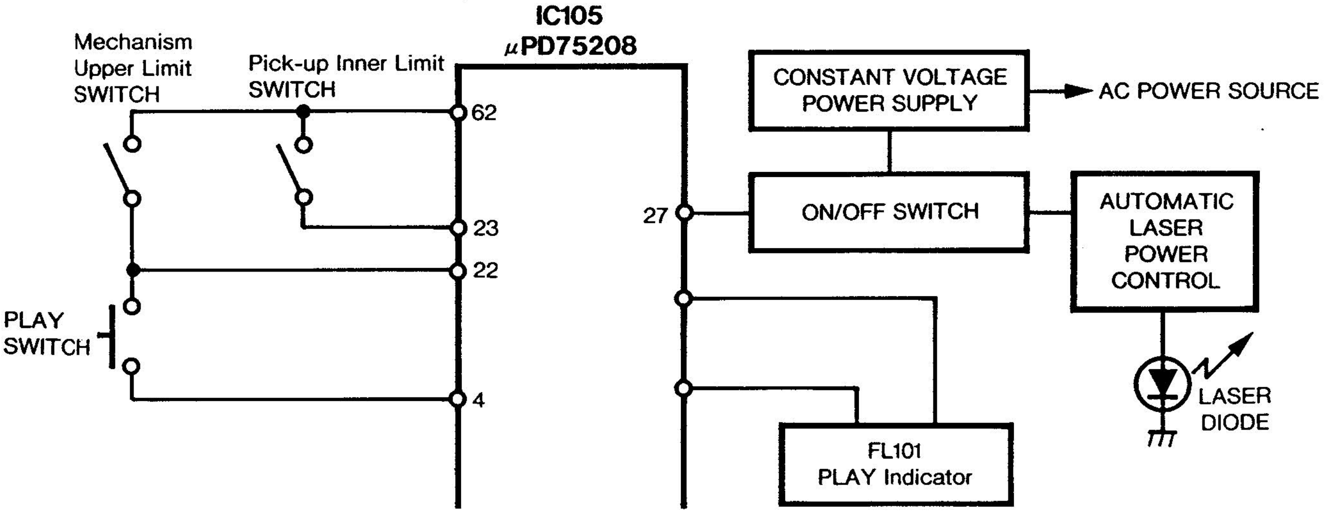
The Digital Compact Disc Player reads the disc signal by detecting the laser beam. It must be avoided for the human body to directly receive the beam. Especially human eyes are badly affected by the beam. Therefore, the unit is equipped with an interlock to prevent the unnecessary laser outputs.

The laser outputs are controlled by the injection or cutoff of the constant voltage source to the laser diode with Pin 27 of IC105 (μPD75208). When Pin 27 is in "L" (Low) level, the laser emits the beam. When Pin 27 is in "H" (High) level, the laser does not emit the beam.
Pin 27 is set in "H" level when the unit is loaded with the disc and it reads the index signals or when the unit is set in the play mode after that. When the unit reads the index signals and the following two conditions are met, the laser emits the beam.

1) When the Mechanism Upper Limit Switch is on.
2) When the Pick-up Inner Limit Switch is on. (The disc tray is closed.)
3) The pickup is located at the area of the minimum internal circumference.

After the above conditions are met and the index signals have been read, the laser emits the beam when the following two conditions are met.

1) When the PLAY button is pressed.
2) When the PLAY indicator is on.


IC105
μPD75208
Mechanism
Upper Limit
SWITCH
Pick-up Inner Limit
SWITCH
62
23
22
4
27
PLAY
SWITCH
CONSTANT VOLTAGE
POWER SUPPLY
AC POWER SOURCE
ON/OFF SWITCH
AUTOMATIC
LASER
POWER
CONTROL
LASER
DIODE
FL101
PLAY Indicator

P.C.BOARD PARTS LIST

Ref. No.	Part No.	Description	Q'ty
PC1	**0B100X6810**	**MAIN P.C.B. ASSY**	
PC1	**0B100X6811**	**MAIN P.C.B. ASSY**	
PC1	**0B100X6814**	**MAIN P.C.B. ASSY**	
61	1EA4B10A47100	MAIN PCB	1
	SFBAN306R0SE-	SCR S-TPG BRZ 3×6	2
	1EA2323A02101	MOUNT-E, FL, RIGHT	2
	14122899838000	ADHESIVE FILM	2
	13126201400000	PLATE HEAT SINK	1
	13126201371000	PLATE HEAT SINK	1
	13126201215000	PLATE HEAT SINK	1
CN1	42369763700	PLUG 5P	1
CN2	42369736750	PLUG 6P	1
CN3	1EA4J10A01700	PLUG 6P	1
CN4	42369750000	PLUG 6P	1
FL101	1EA4141A01800	FLUORESCENT TUBE, FIP9CBM7	1
HDW1	1EA4J11A01104	SOCKET, HOLDER 6P	1
DW3	1EA4J11A03903	SOCKET, HOLDER 3P	1
L101	1EA4L302R2KAA	INDUCTOR 2.2UH K	1
L102	1EA4L302R2KAA	INDUCTOR 2.2UH K	1
P101	42229765600	POTENTIOMETER 100KB	1
P102	42229765620	POTENTIOMETER 20KB	1
P103	42229765600	POTENTIOMETER 100KB	1
P106	42229765600	POTENTIOMETER 100KB	1
SW01	1EA4S14A02300	SWITCH, TACT (DISC 1)	1
SW02	1EA4S14A02300	SWITCH, TACT (PAUSE)	1
SW03	1EA4S14A02300	SWITCH, TACT (PLAY)	1
SW04	1EA4S14A02300	SWITCH, TACT (STOP)	1
SW05	1EA4S14A02300	SWITCH, TACT (DISC 5)	1
SW06	1EA4S14A02300	SWITCH, TACT (DISC 4)	1
SW07	1EA4S14A02300	SWITCH, TACT (DISC 3)	1
SW08	1EA4S14A02300	SWITCH, TACT (DISC 2)	1
SW09	1EA4S14A02300	SWITCH, TACT (CLEAR)	1
SW10	1EA4S14A02300	SWITCH, TACT (REPEAT)	1
SW11	1EA4S14A02300	SWITCH, TACT (B SKIP)	1
SW12	1EA4S14A02300	SWITCH, TACT (F SKIP)	1
SW13	1EA4S14A02300	SWITCH, TACT (MEMORY)	1
SW14	1EA4S14A02300	SWITCH, TACT (CHECK)	1
SW15	1EA4S14A02300	SWITCH, TACT (ROTATE)	1
SW16	1EA4S14A02300	SWITCH, TACT (B SCAN)	1
SW17	1EA4S14A02300	SWITCH, TACT (F SCAN)	1
SW18	1EA4S14A02300	SWITCH, TACT (DISPLAY)	1
W01	1EA4W30A14500	WIRE, 6P	1
W03	1EA4W30A14800	WIRE, 3P	1
W04	1EA4W30A14700	WIRE, 3P	1
X101	42259711010	CRYSTAL 16.9344MHz	1
X102	1EA4V10A01100	RESONATOR, CERAMIC, 4.32MHz	1
IC101	QLA9200NM---N	IC LA9200NM	1
IC102	QYM7121B----N	IC YM7121B	1
IC103	QLA6520-----N	IC LA6520	1
IC104	QLA6510-----N	IC LA6510	1
IC105	QXXEA0980000N	IC UPD75208CW-A88	1
IC106	QLC7881-C---N	IC LC7881-C	1
IC107	QRC4558D----N	IC RC4558D	1
IC108	QRC4558D----N	IC RC4558D	1
IC109	QMC7805CT---N	IC MC7805CT	1
IC110	QNJM78L06A--C	IC NJM78L06A (T3)	1
IC111	QNJM79L06A--C	IC NJM79L06A (T3)	1
Q101	T2SC3330-S--C	TR 2SC3330-S-AC	1
Q101	T2SC3330-T--C	TR 2SC3330-T-AC	1
Q102	T2SA1346----C	TR 2SA1346-AC	1
Q103	T2SC3330-S--C	TR 2SC3330-S-AC	1
Q103	T2SC3330-T--C	TR 2SC3330-T-AC	1
Q104	T2SA1346----C	TR 2SA1346-AC	1
Q105	T2SC3400----C	TR 2SC3400-AC	1
Q106	T2SC3400----C	TR 2SC3400-AC	1
Q107	T2SC3400----C	TR 2SC3400-AC	1
Q108	T2SC3400----C	TR 2SC3400-AC	1
Q109	T2SC3400----C	TR 2SC3400-AC	1
Q110	T2SA1529----C	TR 2SA1529-AA	1
Q111	T2SC3400----C	TR 2SC3400-AC	1
Q112	T2SA1317-S--C	TR 2SA1317-S-AC	1
Q112	T2SA1317-T--C	TR 2SA1317-T-AC	1
Q113	T2SC3330-S--C	TR 2SC3330-S-AC	1
Q113	T2SC3330-T--C	TR 2SC3330-T-AC	1
Q114	T2SC3330-S--C	TR 2SC3330-S-AC	1
Q114	T2SC3330-T--C	TR 2SC3330-T-AC	1
Q115	T2SD1012-F-SC	TR 2SD1012-F-SPA-AC	1
Q115	T2SD1012-G-SC	TR 2SD1012-G-SPA-AC	1
Q116	T2SD1012-F-SC	TR 2SD1012-F-SPA-AC	1
Q116	T2SD1012-G-SC	TR 2SD1012-G-SPA-AC	1
D101	DDGMB01-----A	DI GMB01-BT	1
D102	DDGMB01-----A	DI GMB01-BT	1
D103	DDGMB01-----A	DI GMB01-BT	1
D104	DDGMB01-----A	DI GMB01-BT	1
D105	DDDS442-----A	DI DS442-BT	1
D106	DDDS442-----A	DI DS442-BT	1
D107	DDDS442-----A	DI DS442-BT	1
D108	DDDS442-----A	DI DS442-BT	1
D109	DDDS442-----A	DI DS442-BT	1
D110	DDGMB01-----A	DI GMB01-BT	1
D111	DDGMB01-----A	DI GMB01-BT	1
D112	DDDS442-----A	DI DS442-BT	1
D113	DDGMB01-----A	DI GMB01-BT	1
D115	DDDS442-----A	DI DS442-BT	1
D116	DDDS442-----A	DI DS442-BT	1
D117	DDDS442-----A	DI DS442-BT	1
D118	DDDS442-----A	DI DS442-BT	1
D119	DDDS442-----A	DI DS442-BT	1
D120	DDDS442-----A	DI DS442-BT	1
D121	DDGMB01-----A	DI GMB01-BT	1
D122	DDDS442-----A	DI DS442-BT	1
D123	DDDS442-----A	DI DS442-BT	1
D124	DDGMB01-----A	DI GMB01-BT	1
D125	DDERA15-02--C	DI ERA15-02	1
D126	DDGMB01-----A	DI GMB01-BT	1
D127	DDGMB01-----A	DI GMB01-BT	1
D128	DDERA15-02--C	DI ERA15-02	1
D129	DDERA15-02--C	DI ERA15-02	1
D130	DDERA15-02--C	DI ERA15-02	1

P.C.BOARD PARTS LIST(Continued)

Ref. No.	Part No.	Description				Q'ty
D131	DDERA15-02--C	DI ERA15-02				1
D132	DDERA15-02--C	DI ERA15-02				1
D133	DDERA15-02--C	DI ERA15-02				1
D134	DZGZS30Y----A	ZD GZS30Y-BT				1
D135	DZGZS5.1Y---A	ZD GZS5.1Y-BT				1
D136	DDGMB01-----A	DI GMB01-BT				1
D137	DDGMB01-----A	DI GMB01-BT				1
D138	DDGMB01-----A	DI GMB01-BT				1
C101	CC1H100DABGLC	CERAMIC	10P	D	50V	1
C102	CC1H5R0CABGLC	CERAMIC	5P	C	50V	1
C103	CC1H680KABGLC	CERAMIC	68P	K	50V	1
C104	CC1H680KABGLC	CERAMIC	68P	K	50V	1
C105	CC1H181KABGLC	CERAMIC	180P	K	50V	1
C106	CE1HR47MDFALC	ELECT	0.47U	M	50V	1
C107	CE0J101MDFALC	ELECT	100U	M	6.3V	1
C108	CE0J101MDFALC	ELECT	100U	M	6.3V	1
C109	CB1E473KADRLC	CERAMIC	0.047U	K	25V	1
C110	CB1E473KADRLC	CERAMIC	0.047U	K	25V	1
C111	CC1H180KABGLC	CERAMIC	18P	K	50V	1
C112	CC1H180KABGLC	CERAMIC	18P	K	50V	1
C113	CB1E473KADRLC	CERAMIC	0.047U	K	25V	1
C114	CE0J101MDFALC	ELECT	100U	M	6.3V	1
C115	CF1H103JANALC	POLY	0.01U	J	50V	1
C116	CF1H102JANALC	POLY	1000P	J	50V	1
C117	CH1H224JAAALC	MT-COMPO	0.22U	J	50V	1
C118	CH1H334JAAALC	MT-COMPO	0.33U	J	50V	1
C119	CH1H154JAAALC	MT-COMPO	0.15U	J	50V	1
C120	CC1H221KABGLC	CERAMIC	220P	K	50V	1
C121	CB1E473KADRLC	CERAMIC	0.047U	K	25V	1
C122	CE0J101MDFALC	ELECT	100U	M	6.3V	1
C123	CE0J101MDFALC	ELECT	100U	M	6.3V	1
C124	CB1E473KADRLC	CERAMIC	0.047U	K	25V	1
C125	CH1H104JAAALC	MT-COMPO	0.1U	J	50V	1
C126	CF1H223JANALC	POLY	0.022U	J	50V	1
C127	CF1H103JANALC	POLY	0.01U	J	50V	1
C128	CH1H473JAAALC	MT-COMPO	0.047U	J	50V	1
C129	CH1H473JAAALC	MT-COMPO	0.047U	J	50V	1
C130	CC1H5R0CABGLC	CERAMIC	5P	C	50V	1
C131	CC1H101KABGLC	CERAMIC	100P	K	50V	1
C132	CC1H471KABGLC	CERAMIC	470P	K	50V	1
C133	CC1H471KABGLC	CERAMIC	470P	K	50V	1
C134	CH1H104JAAALC	MT-COMPO	0.1U	J	50V	1
C135	CH1H683JAAALC	MT-COMPO	0.068U	J	50V	1
C136	CH1H474JAAALC	MT-COMPO	0.47U	J	50V	1
C137	CP1C4R7MBAALC	NP-ELECT	4.7U	M	16V	1
C138	CH1H473JAAALC	MT-COMPO	0.047U	J	50V	1
C139	CP1H1R0MBAALC	NP-ELECT	1U	M	50V	1
C140	CP1H1R0MBAALC	NP-ELECT	1U	M	50V	1
C141	CF1H102JANALC	POLY	1000P	J	50V	1
C142	CF1H222JANALC	POLY	2200P	J	50V	1
C143	CF1H123JANALC	POLY	0.012U	J	50V	1
C144	CF1H123JANALC	POLY	0.012U	J	50V	1
C145	CE0J101MDFALC	ELECT	100U	M	6.3V	1
C146	CE1H2R2MDFALC	ELECT	2.2U	M	50V	1
C147	CE1C221MDFALC	ELECT	220U	M	16V	1
C148	CE1C221MDFALC	ELECT	220U	M	16V	1
C149	CH1H473JAAALC	MT-COMPO	0.047U	J	50V	1
C150	CP1H1R0MBAALC	NP-ELECT	1U	M	50V	1
C151	CH1H473JAAALC	MT-COMPO	0.047U	J	50V	1
C152	CP1H1R0MBAALC	NP-ELECT	1U	M	50V	1
C153	CE1H2R2MDFALC	ELECT	2.2U	M	50V	1
C154	CE1H100MDFALC	ELECT	10U	M	50V	1
C155	CE1H1R0MDFALC	ELECT	1U	M	50V	1
C156	CF1H102JANALC	POLY	1000P	J	50V	1
C157	CC1H120JABCLC	CERAMIC	12P	J	50V	1
C158	CC1H120JABCLC	CERAMIC	12P	J	50V	1
C159	CE0J101MDFALC	ELECT	100U	M	6.3V	1
C160	CH1H104JAAALC	MT-COMPO	0.1U	J	50V	1
C161	CF1H472JANALC	POLY	4700P	J	50V	1
C162	CC1H561KABGLC	CERAMIC	560P	K	50V	1
C163	CH1H224JAAALC	MT-COMPO	0.22U	J	50V	1
C164	CE1H4R7MDFALC	ELECT	4.7U	M	50V	1
C165	CE1H4R7MDFALC	ELECT	4.7U	M	50V	1
C166	CB1E473KADRLC	CERAMIC	0.047U	K	25V	1
C167	CB1E473KADRLC	CERAMIC	0.047U	K	25V	1
C168	CE0J101MDFALC	ELECT	100U	M	6.3V	1
C169	CE0J331MDFALC	ELECT	330U	M	6.3V	1
C170	CE0J101MDFALC	ELECT	100U	M	6.3V	1
C171	CE0J101MDFALC	ELECT	100U	M	6.3V	1
C172	CE0J101MDFALC	ELECT	100U	M	6.3V	1
C173	CE1C471MDFALC	ELECT	470U	M	16V	1
C174	CE1C101MDFALC	ELECT	100U	M	16V	1
C175	CE1H2R2MDFALC	ELECT	2.2U	M	50V	1
C176	CE1HR47MDFALC	ELECT	4.7U	M	50V	1
C177	CE1C332MDFANN	ELECT	3300U	M	16V	1
C178	CE1C332MDNANN	ELECT	3300U	M	16V	1
C179	CE1H331MDFANN	ELECT	330U	M	50V	1
C180	CE1H331MDFANN	ELECT	330U	M	50V	1
C181	CE1V470MDFALC	ELECT	47U	M	35V	1
C182	CK1H473ZAFFLC	CERAMIC	0.047U	Z	50V	1
C183	CK1H473ZAFFLC	CERAMIC	0.047U	Z	50V	1
C184	CK1H473ZAFFLC	CERAMIC	0.047U	Z	50V	1
C185	CK1H473ZAFFLC	CERAMIC	0.047U	Z	50V	1
C186	CK1H473ZAFFLC	CERAMIC	0.047U	Z	50V	1
C187	CE0J331MDFALC	ELECT	330U	M	6.3V	1
C188	CE0J101MDFALC	ELECT	100U	M	6.3V	1
C189	CE0J221MDFALC	ELECT	220U	M	6.3V	1
C190	CE0J221MDFALC	ELECT	220U	M	6.3V	1
C191	CF1H333JANALC	POLY	0.033U	J	50V	1
C192	CF1H333JANALC	POLY	0.033U	J	50V	1
C193	CE1H100MDFALC	ELECT	10U	M	50V	1
C194	CE1H100MDFALC	ELECT	10U	M	50V	1
C195	CF1H102JANALC	POLY	1000P	J	50V	1
C196	CF1H102JANALC	POLY	1000P	J	50V	1
C197	CF1H102JANALC	POLY	1000P	J	50V	1
C198	CF1H102JANALC	POLY	1000P	J	50V	1
C201	CP1C100MBAALC	NP-ELECT	10U	M	16V	1
C202	CP1C100MBAALC	NP-ELECT	10U	M	16V	1
C211	CK1H222ZAFFLC	CERAMIC	2200P	Z	50V	1
C212	CK1H222ZAFFLC	CERAMIC	2200P	Z	50V	1
C213	CK1H222ZAFFLC	CERAMIC	2200P	Z	50V	1
C214	CK1H222ZAFFLC	CERAMIC	2200P	Z	50V	1
C215	CK1H222ZAFFLC	CERAMIC	2200P	Z	50V	1
C216	CB1E473KADRLC	CERAMIC	0.047U	K	25V	1

P.C.BOARD PARTS LIST(Continued)

Ref. No.	Part No.	Description					Q'ty
C219	CB1E473KADRLC	CERAMIC	0.047U	K	25V		1
C227	CB1E473KADRLC	CERAMIC	0.047U	K	25V		1
C230	CH1H473JAAALC	MT-COMPO	0.047U	J	50V		1
C231	CB1E473KADRLC	CERAMIC	0.047U	K	25V		1
C232	CB1E473KADRLC	CERAMIC	0.047U	K	25V		1
C233	CB1E473KADRLC	CERAMIC	0.047U	K	25V		1
C234	CB1E473KADRLC	CERAMIC	0.047U	K	25V		1
C235	CB1E473KADRLC	CERAMIC	0.047U	K	25V		1
C237	CB1E473KADRLC	CERAMIC	0.047U	K	25V		1
C238	CB1E473KADRLC	CERAMIC	0.047U	K	25V		1
C240	CF1H472JANALC	POLY	4700P	J	50V		1
R101	RDD1002JPAANA	CARBON	10K	JA	1/6W		1
R102	RDD1002JPAANA	CARBON	10K	JA	1/6W		1
R103	RDD8203JPAANA	CARBON	820K	JA	1/6W		1
R105	RDB5601JPBANA	CARBON	5.6K	JA	1/4W		1
R106	RDD2202JPAANA	CARBON	22K	JA	1/6W		1
R107	RDD1502JPAANA	CARBON	15K	JA	1/6W		1
R108	RDD1002JPAANA	CARBON	10K	JA	1/6W		1
R109	RDD1503JPAANA	CARBON	150K	JA	1/6W		1
R110	RDD1003JPAANA	CARBON	100K	JA	1/6W		1
R111	RDD1001JPAANA	CARBON	1K	JA	1/6W		1
R112	RDD8202JPAANA	CARBON	82K	JA	1/6W		1
R113	RDD8202JPAANA	CARBON	82K	JA	1/6W		1
R114	RDD1502JPAANA	CARBON	15K	JA	1/6W		1
R115	RDD1001JPAANA	CARBON	1K	JA	1/6W		1
R116	RDD1202JPAANA	CARBON	12K	JA	1/6W		1
R117	RDD3902JPAANA	CARBON	39K	JA	1/6W		1
R118	RDD1202JPAANA	CARBON	12K	JA	1/6W		1
R119	RDD3902JPAANA	CARBON	39K	JA	1/6W		1
R120	RDD2702JPAANA	CARBON	27K	JA	1/6W		1
R121	RDD1003JPAANA	CARBON	100K	JA	1/6W		1
R122	RDD2203JPAANA	CARBON	220K	JA	1/6W		1
R123	RDD2700JPAANA	CARBON	270	JA	1/6W		1
R124	RDB1001JPBANA	CARBON	1K	JA	1/4W		1
R125	RDB1001JPBANA	CARBON	1K	JA	1/4W		1
R126	RDB1002JPBANA	CARBON	10K	JA	1/4W		1
R127	RDB1003JPBANA	CARBON	100K	JA	1/4W		1
R128	RDB4701JPBANA	CARBON	4.7K	JA	1/4W		1
R129	RDD2202JPAANA	CARBON	22K	JA	1/6W		1
R130	RDD2202JPAANA	CARBON	22K	JA	1/6W		1
R131	RDD2R20JPAANA	CARBON	2.2	JA	1/6W		1
R132	RDD3303JPAANA	CARBON	330K	JA	1/6W		1
R133	RDD2702JPAANA	CARBON	27K	JA	1/6W		1
R134	RDD2R20JPAANA	CARBON	2.2	JA	1/6W		1
R135	RDD2703JPAANA	CARBON	270K	JA	1/6W		1
R136	RDD4702JPAANA	CARBON	47K	JA	1/6W		1
R137	RDD2202JPAANA	CARBON	22K	JA	1/6W		1
R138	RDD1201JPAANA	CARBON	1.2K	JA	1/6W		1
R139	RDD2202JPAANA	CARBON	22K	JA	1/6W		1
R140	RDD5601JPAANA	CARBON	5.6K	JA	1/6W		1
R141	RDD6803JPAANA	CARBON	680K	JA	1/6W		1
R142	RDD6802JPAANA	CARBON	68K	JA	1/6W		1
R143	RDD2203JPAANA	CARBON	220K	JA	1/6W		1
R144	RDD2201JPAANA	CARBON	2.2K	JA	1/6W		1
R145	RDD1002JPAANA	CARBON	10K	JA	1/6W		1
R146	RDD4702JPAANA	CARBON	47K	JA	1/6W		1
R147	RDD2R20JPAANA	CARBON	2.2	JA	1/6W		1

Ref. No.	Part No.	Description				Q'ty
R148	RDB2R20JPBANA	CARBON	2.2	JA	1/4W	1
R149	RDB1R00JPBANA	CARBON	1	JA	1/4W	1
R150	RDD1502JPAANA	CARBON	15K	JA	1/6W	1
R151	RDD6802JPAANA	CARBON	68K	JA	1/6W	1
R152	RDD1001JPAANA	CARBON	1K	JA	1/6W	1
R153	RDD5603JPAANA	CARBON	560K	JA	1/6W	1
R154	RDD5603JPAANA	CARBON	560K	JA	1/6W	1
R155	RDD1003JPAANA	CARBON	100K	JA	1/6W	1
R156	RDD1003JPAANA	CARBON	100K	JA	1/6W	1
R157	RDD1003JPAANA	CARBON	100K	JA	1/6W	1
R158	RDB3303JPBANA	CARBON	330K	JA	1/4W	1
R159	RDB3303JPBANA	CARBON	330K	JA	1/4W	1
R160	RDB4701JPBANA	CARBON	4.7K	JA	1/4W	1
R161	RDB4701JPBANA	CARBON	4.7K	JA	1/4W	1
R162	RDD4701JPAANA	CARBON	4.7K	JA	1/6W	1
R163	RDD4701JPAANA	CARBON	4.7K	JA	1/6W	1
R164	RDD2201JPAANA	CARBON	2.2K	JA	1/6W	1
R165	RDD2201JPAANA	CARBON	2.2K	JA	1/6W	1
R166	RDD2202JPAANA	CARBON	22K	JA	1/6W	1
R167	RDD1002JPAANA	CARBON	10K	JA	1/6W	1
R168	RDD4702JPAANA	CARBON	47K	JA	1/6W	1
R169	RDB1002JPBANA	CARBON	10K	JA	1/4W	1
R170	RDD2R20JPAANA	CARBON	2.2	JA	1/6W	1
R171	RDB2R70JPBANA	CARBON	2.7	JA	1/4W	1
R172	RDD1001JPAANA	CARBON	1K	JA	1/6W	1
R173	RDD1002JPAANA	CARBON	10K	JA	1/6W	1
R174	RDD1500JPAANA	CARBON	150	JA	1/6W	1
R175	RDB4702JPBANA	CARBON	47K	JA	1/4W	1
R176	RDB6802JPBANA	CARBON	68K	JA	1/4W	1
R177	RDD2R20JPAANA	CARBON	2.2	JA	1/6W	1
R178	RDB2R20JPBANA	CARBON	2.2	JA	1/4W	1
R179	RDB2R20JPBANA	CARBON	2.2	JA	1/4W	1
R180	RDD1002JPAANA	CARBON	10K	JA	1/6W	1
R181	RDD1001JPAANA	CARBON	1K	JA	1/6W	1
R182	RDD1002JPAANA	CARBON	10K	JA	1/6W	1
R183	RDD1800JPAANA	CARBON	180	JA	1/6W	1
R184	RDD1803JPAANA	CARBON	180K	JA	1/6W	1
R185	RDD1003JPAANA	CARBON	100K	JA	1/6W	1
R186	RDB1001JPBANA	CARBON	1K	JA	1/4W	1
R187	RDD3302JPAANA	CARBON	33K	JA	1/6W	1
R188	RDD3300JPAANA	CARBON	330	JA	1/6W	1
R189	RDD1002JPAANA	CARBON	10K	JA	1/6W	1
R190	RDB1002JPBANA	CARBON	10K	JA	1/4W	1
R191	RDD6800JPAANA	CARBON	680	JA	1/6W	1
R192	RDD6800JPAANA	CARBON	680	JA	1/6W	1
R193	RDD6800JPAANA	CARBON	680	JA	1/6W	1
R194	RDD6800JPAANA	CARBON	680	JA	1/6W	1
R195	RDD1004JPAANA	CARBON	1M	JA	1/6W	1
R196	RDD2200JPAANA	CARBON	220	JA	1/6W	1
R197	RDD1001JPAANA	CARBON	1K	JA	1/6W	1
R198	RDD4702JPAANA	CARBON	47K	JA	1/6W	1
R199	RDD4702JPAANA	CARBON	47K	JA	1/6W	1
R200	RDD4702JPAANA	CARBON	47K	JA	1/6W	1
R201	RDD4701JPAANA	CARBON	4.7K	JA	1/6W	1
R202	RDD2702JPAANA	CARBON	27K	JA	1/6W	1
R203	RDD4703JPAANA	CARBON	470K	JA	1/6W	1
R204	RDD1002JPAANA	CARBON	10K	JA	1/6W	1

P.C.BOARD PARTS LIST(Continued)

Ref. No.	Part No.	Description	Q'ty
R205	RDD1002JPAANA	CARBON 10K JA 1/6W	1
R206	RDD4701JPAANA	CARBON 4.7K JA 1/6W	1
R207	RDD2202JPAANA	CARBON 22K JA 1/6W	1
R208	RDD2202JPAANA	CARBON 22K JA 1/6W	1
R209	RDD2202JPAANA	CARBON 22K JA 1/6W	1
R210	RDD2202JPAANA	CARBON 22K JA 1/6W	1
R211	RDD4702JPAANA	CARBON 47K JA 1/6W	1
R212	RDD2200JPAANA	CARBON 220 JA 1/6W	1
R213	RDD1003JPAANA	CARBON 100K JA 1/6W	1
R214	RDD1002JPAANA	CARBON 10K JA 1/6W	1
R215	RDD1002JPAANA	CARBON 10K JA 1/6W	1
R216	RDD2200JPAANA	CARBON 220 JA 1/6W	1
R217	RDB47R0JPBANA	CARBON 47 JA 1/4W	1
R218	RDB47R0JPBANA	CARBON 47 JA 1/4W	1
R219	RDD22R0JPAANA	CARBON 22 JA 1/6W	1
R220	RDD22R0JPAANA	CARBON 22 JA 1/6W	1
R221	RDD2202JPAANA	CARBON 22K JA 1/6W	1
R222	RDD3302JPAANA	CARBON 33K JA 1/6W	1
R223	RFXEA0084R70N	FUSIBLE 4.7 J- 1/2W	1
R224	RFXEA0084R70N	FUSIBLE 4.7 J- 1/2W	1
R225	RFXEA008R470N	FUSIBLE 0.47 J- 1/2W	1
R226	RFXEA008R470N	FUSIBLE 0.47 J- 1/2W	1
R227	RDB1000JPBANA	CARBON 100 JA 1/4W	1
R228	RDD2201JPAANA	CARBON 2.2K JA 1/6W	1
R229	RDD47R0JPAANA	CARBON 47 JA 1/6W	1
R231	RDB1001JPBANA	CARBON 1K JA 1/4W	1
R234	RDD1002JPAANA	CARBON 10K JA 1/6W	1
R235	RDD1002JPAANA	CARBON 10K JA 1/6W	1
R236	RDD1002JPAANA	CARBON 10K JA 1/6W	1
R237	RDD1501JPAANA	CARBON 1.5K JA 1/6W	1
R238	RDD1501JPAANA	CARBON 1.5K JA 1/6W	1
R241	RDD3900JPAANA	CARBON 390 JA 1/6W	1
R242	RDD3900JPAANA	CARBON 390 JA 1/6W	1
R245	RDD4702JPAANA	CARBON 47K JA 1/6W	1
R246	RDD4702JPAANA	CARBON 47K JA 1/6W	1
R247	RDD5601JPAANA	CARBON 5.6K JA 1/6W	1
R248	RDD5601JPAANA	CARBON 5.6K JA 1/6W	1
R249	RDD6801JPAANA	CARBON 6.8K JA 1/6W	1
R250	RDD6801JPAANA	CARBON 6.8K JA 1/6W	1
R251	RDD1202JPAANA	CARBON 12K JA 1/6W	1
R252	RDD1202JPAANA	CARBON 12K JA 1/6W	1
R253	RDD1002JPAANA	CARBON 10K JA 1/6W	1
R254	RDD1002JPAANA	CARBON 10K JA 1/6W	1
R255	RDD1003JPAANA	CARBON 100K JA 1/6W	1
R256	RDD1003JPAANA	CARBON 100K JA 1/6W	1
R257	RDD1001JPAANA	CARBON 1K JA 1/6W	1
R258	RDD1001JPAANA	CARBON 1K JA 1/6W	1
R259	RDD6801JPAANA	CARBON 6.8K JA 1/6W	1
R260	RDB6801JPBANA	CARBON 6.8K JA 1/4W	1
R264	RDD8200JPAANA	CARBON 820 JA 1/6W	1
R267	RDB1002JPBANA	CARBON 10K JA 1/4W	1
R269	RDD4701JPAANA	CARBON 4.7K JA 1/6W	1
R270	RDD4701JPAANA	CARBON 4.7K JA 1/6W	1
R272	RDB1001JPBANA	CARBON 1K JA 1/4W	1
R273	RDD4702JPAANA	CARBON 47K JA 1/6W	1
R274	RDD2701JPAANA	CARBON 2.7K JA 1/6W	1
R275	RDD1002JPAANA	CARBON 10K JA 1/6W	1

Ref. No.	Part No.	Description	Q'ty
R276	RDD8201JPAANA	CARBON 8.2K JA 1/6W	1
R277	RDD4701JPAANA	CARBON 4.7K JA 1/6W	1
R278	RDD2202JPAANA	CARBON 22K JA 1/6W	1
R279	RDB1001JPBANA	CARBON 1K JA 1/4W	1
		0B100X6810 ONLY	
	30031000190000	TNW 0.6	38
	30031000220000	TNW 0.6	93
HDW04	1EA4J11A03903	SOCKET, HOLDER 3P	1
W004	1EA4W30A14700	WIRE 3P	1
		0B100X6811 ONLY	
	30031000190000	TNW 0.6	38
	30031000220000	TNW 0.6	93
HDW04	1EA4J11A03903	SOCKET, HOLDER 3P	1
HDW06	1EA4J11A03903	SOCKET, HOLDER 3P	1
W004	1EA4W30A14700	WIRE 3P	1
		0B100X6814 ONLY	
	30031000190000	TNW 0.6	41
	30031000220000	TNW 0.6	94
HDW05	1EA4J11A01104	SOCKET, HOLDER 6P	1
HDW06	1EA4J11A03903	SOCKET, HOLDER 3P	1
W005	1EA4W30A14500	WIRE 6P	1
PC2	**0B100X6820**	**POWER P.C.B. ASSY**	
ZA002	1EA4B10A47200	PCB, POWER	1
	42372008300	EC TERMINAL 1P	2
⚠C501	42239709700	CAPACITOR 0.01MF 400V	1
SH01	1EA4J11A01104	SOCKET, HOLDER 6P	1
⚠SW501	1EA4S11A01200	SWITCH, PUSH 1-1	1
⚠F1	F31SR63C25CTX	FUSE 250V 630mA	2
⚠F2	1EA4J20A00101	FUSE CLIP	4
PC2	**0B100X6821**	**POWER P.C.B. ASSY**	
ZA002	1EA4B10A47200	PCB, POWER	1
	42372008300	EC TERMINAL 1P	2
⚠C501	42239709700	CAPACITOR 0.01MF 400V	1
SH01	1EA4J11A01104	SOCKET, HOLDER 6P	1
⚠SW501	1EA4S11A01200	SWITCH, PUSH 1-1	1
	30031000220000	TNW 0.6	2
PC2	**0B100X6822**	**POWER P.C.B. ASSY**	
ZA002	1EA4B10A47200	PCB, POWER	1
	42372008300	EC TERMINAL 1P	2
⚠C501	42239723400	CAPACITOR 0.01MF 250V	1
SH01	1EA4J11A01104	SOCKET, HOLDER 6P	1
⚠SW501	1EA4S11A01200	SWITCH, PUSH 1-1	1
	30031000220000	TNW 0.6	2
PC2	**0B100X6823**	**POWER P.C.B. ASSY**	
ZA002	1EA4B10A47200	PCB, POWER	1
	42372008300	EC TERMINAL 1P	2

P.C.BOARD PARTS LIST(Continued)

Ref. No.	Part No.	Description	Q'ty
⚠C501	42239709700	CAPACITOR 0.01MF 400V	1
SH01	1EA4J11A01104	SOCKET, HOLDER 6P	1
⚠SW501	1EA4S11A01200	SWITCH, PUSH 1-1	1
⚠F1	F31SR63C2SCTX	FUSE 250V 630mA	2
F2	1EA4J20A00101	FUSE CLIP	4
W1	4J130X1111	WIRE ASSY	1
W2	4J130X1112	WIRE ASSY	1
W3	4J130X1113	WIRE ASSY	1
PC3	**0B100X6830**	**OUTPUT P.C.B. ASSY**	
ZA003	1EA4B10A47300	PCB, OUTPUT	1
	42352017520	PIN JACK 2P	1
SH03	1EA4J11A03903	SOCKET, HOLDER 3P	1
C304	CK1H102ZAFFLC	CERAMIC 1000P 50V	1
PC3	**0B100X6832**	**OUTPUT P.C.B. ASSY**	
ZA003	1EA4B10A47300	PCB, OUTPUT	1
	42352017520	PIN JACK 2P	1
	4U230X0200	CONVERTOR	1
	1EA4U23A00200	CONVERTOR	1
C304	CK1H1D2ZAFFLC	CERAMIC 1000P 50V	1
C306	CH1H104JAAALC	MT-COMPO 0.1M 50V	1
R301	RDD8202JPAANA	CARBON 8.2K JA 1/6W	1
SH05	1EA4J11A01104	SOCKET, HOLDER 6P	1
PC4	**0B100X6840**	**INTERRUPT P.C.B. ASSY**	
ZA004	1EA4B10A47400	PCB, INTERRUPT	1
D401	DCTLP806----N	PHOTO COUPLER TLP806	1
SH04	1EA4J11A03903	SOCKET, HOLDER 3P	1
PC5	**0B100X6850**	**REMOCON P.C.B. ASSY**	
	1EA4B10A47500	PCB REMOCON	1
W06	1EA4W30A14700	WIRE 3P	1
	4D610X1010	GPIU501X	1
HDW06	1EA4J11A03903	SOCKET, HOLDER 3P	1

PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol ⚠ in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with ⚠, use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual. Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

P.C.B. ASSY SPECIFIED PARTS

Following components are used only for specified parts number of Assy P.C.Board.

MAIN P.C.B. ASSY

	A1	A2	B	C1	C2	D	E1	E2	F	G1	G2	H1	H2	I1	I2	I3	I4
0B100X6810	–	–	–	–	–	JS109	JM114	JM153	–	HDW04	W04	–	–	–	–	–	–
0B100X6811	HDW06	W06	–	–	–	JS109	JM114	JM153	–	HDW04	W04	–	–	–	–	–	–
0B100X6812	HDW06	W06	R230	HDW02	W02	R 1K	DI DS442	DI DS442	TWS LEAD WIRE	HDW04	W04	–	–	–	–	–	–
0B100X6813	–	–	R230	HDW02	W02	R 1K	DI DS442	DI DS442	TWS LEAD WIRE	HDW04	W04	–	–	–	–	–	–
0B100X6814	HDW06	W06	–	–	–	JS109	JM114	JM153	–	–	–	HDW05	W05	JS143	JS	JS	JM189

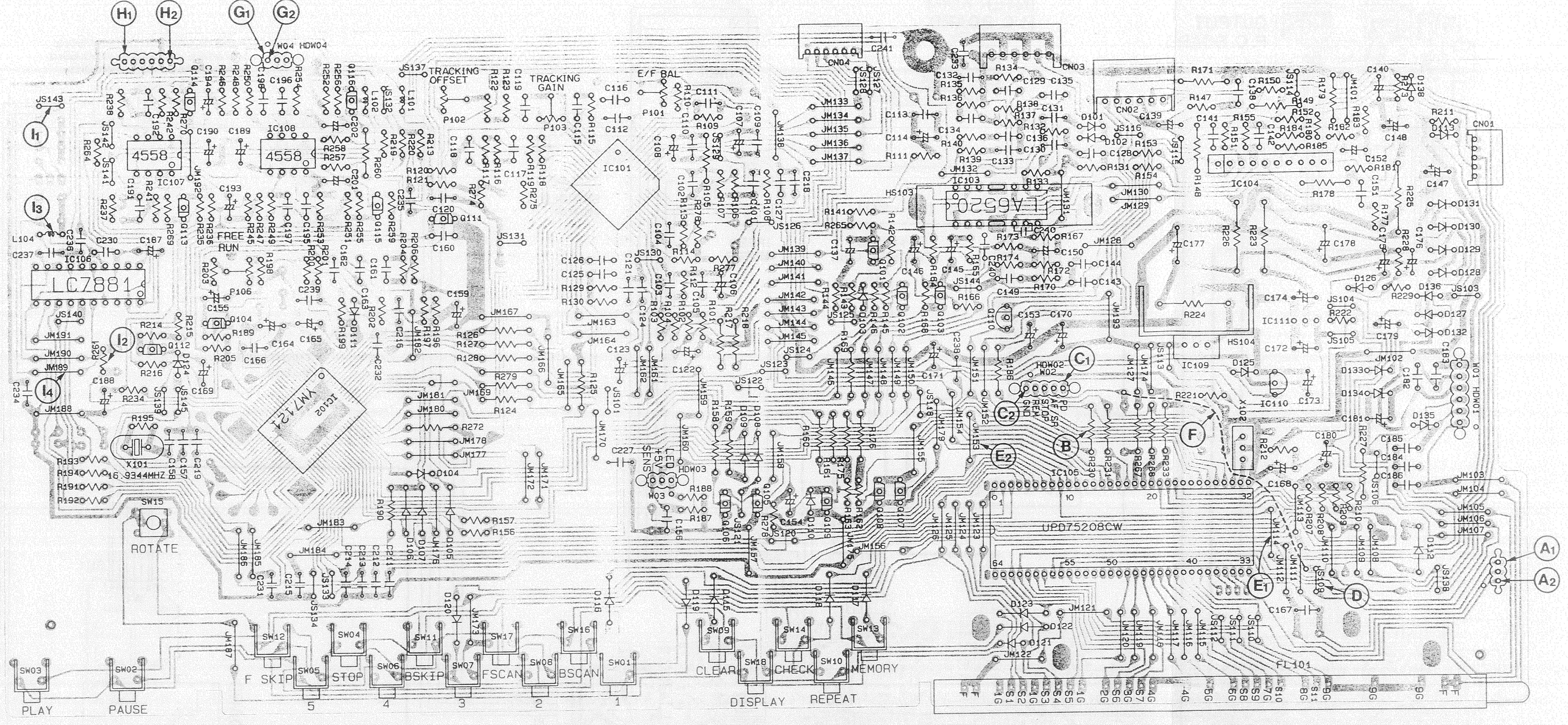
POWER P.C.B. ASSY

	J	K1	K2	L1	L2	M1	M2	M3
0B100X6820	C501 (0.01/400)	F501	F502	–	–	–	–	–
0B100X6821	C501 (0.01/400)	–	–	JM501	JM502	–	–	–
0B100X6822	C501 (0.01/250)	–	–	JM501	JM502	–	–	–
0B100X6823	C501 (0.01/400)	F501	F502	–	–	W501	W502	W503

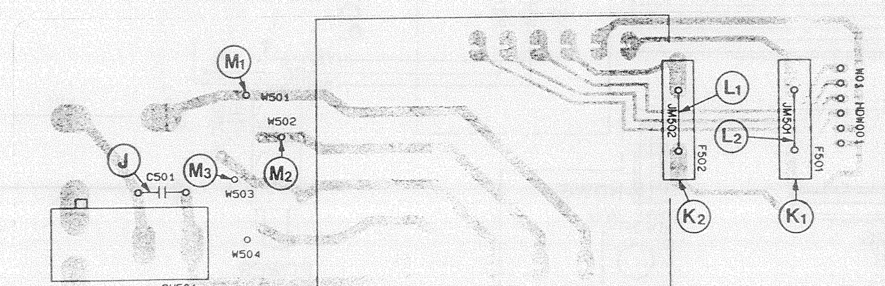
OUTPUT P.C.B. ASSY

	G1	C	N1	N2	N3	N4	N5	N6	N7	N8	H1	P1	P2	P3
0B100X6830	HDW04	–	–	–	–	–	–	–	–	–	–	–	–	–
0B100X6831	HDW04	HDW02	CN05	C308	C309	C311	JS	JS302	GMB01	JM302	–	–	–	–
0B100X6832	–	–	–	–	–	–	–	–	–	–	HDW05	CONVERTER	R301	C306

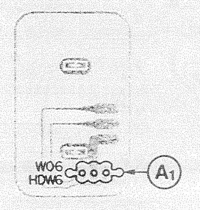
MAIN P.C.BOARD
(BOTTOM VIEW)


H1
H2
G1
G2
W04 HDW04
I1
I2
I3
I4
4558
IC107
4558
IC108
LC7881
IC106
YM7121
IC102
IC101
TRACKING OFFSET
TRACKING GAIN
E/F BAL
FREE RUN
LA6520
IC103
HS103
IC104
CN01
CN02
CN03
CN04
C1
C2
B
E1
E2
D
F
A1
A2
HDW02
W02
HDW01
W01
HDW03
W03
IC105
UPD75208CW
IC109
IC110
IC111
HS104
X101
16.9344MHZ
X102
LED
SENS
SW15
ROTATE
SW03
PLAY
SW02
PAUSE
SW12
F SKIP
SW05
5
SW04
STOP
SW06
4
BSKIP
SW11
SW07
3
FSCAN
SW17
SW08
2
BSCAN
SW16
SW01
1
SW09
CLEAR
SW18
DISPLAY
SW14
CHECK
SW10
REPEAT
SW13
MEMORY
FL101

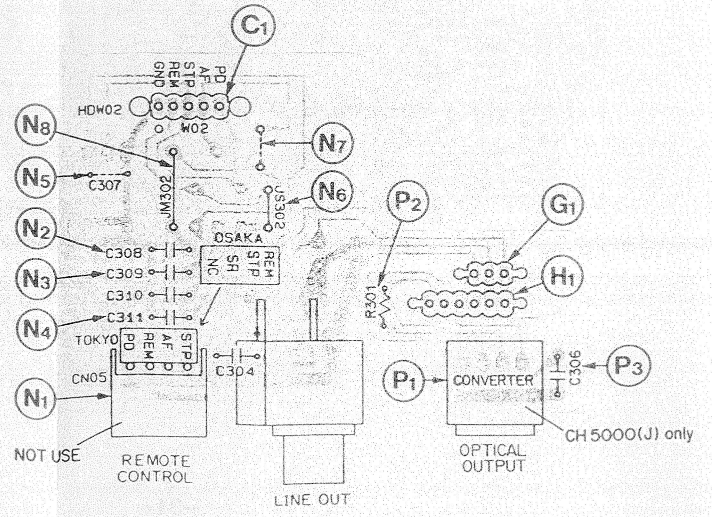
POWER P.C.BOARD
(BOTTOM VIEW)


M1
W501
W502
J
C501
M3
M2
W503
W504
SW501
L1
L2
JM502
JM501
F502
F501
W01
K2
K1

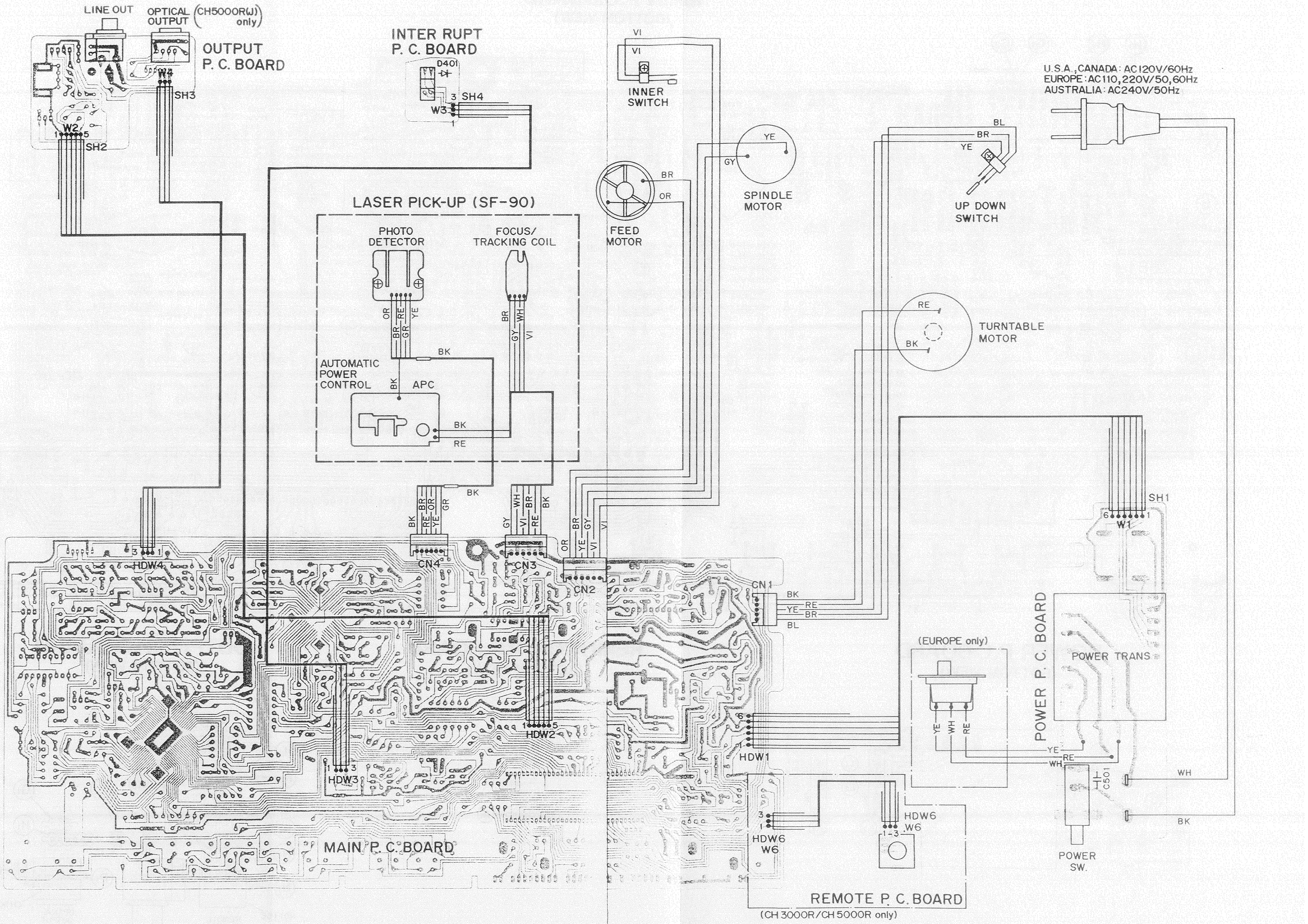
REMOCON P.C.BOARD
(BOTTOM VIEW)



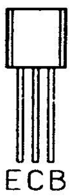
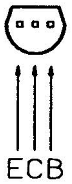
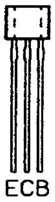
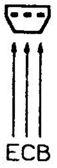
OUTPUT P.C.BOARD
(BOTTOM VIEW)


C1
GND
REM
STP
AF
PD
HDW02
W02
N8
N7
N5
C307
N6
JM302
JS302
N2
C308
OSAKA
N3
C309
NC
SR
REM
STP
C310
N4
C311
TOKYO
PD
REM
AF
STP
N1
CN05
C304
NOT USE
REMOTE CONTROL
LINE OUT
P2
G1
H1
R301
P1
CONVERTER
C306
P3
CH5000(J) only
OPTICAL OUTPUT

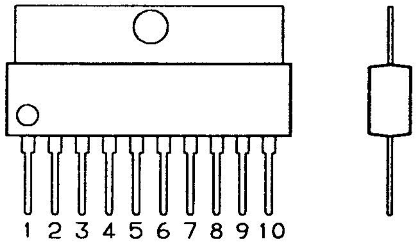
POINT TO POINT WIRING DIAGRAM


LINE OUT
OPTICAL OUTPUT (CH5000R(J) only)
OUTPUT P. C. BOARD
W4
SH3
W2
1
5
SH2
INTER RUPT P. C. BOARD
D401
3
SH4
W3
1
VI
VI
INNER SWITCH
U.S.A., CANADA: AC120V/60Hz
EUROPE: AC110, 220V/50, 60Hz
AUSTRALIA: AC240V/50Hz
YE
GY
SPINDLE MOTOR
BR
OR
FEED MOTOR
BL
BR
YE
UP DOWN SWITCH
LASER PICK-UP (SF-90)
PHOTO DETECTOR
FOCUS/ TRACKING COIL
OR
BR
RE
GR
YE
BR
WH
GY
VI
BK
AUTOMATIC POWER CONTROL
BK
APC
BK
RE
RE
BK
TURNTABLE MOTOR
BK
BK
BR
RE
OR
YE
GR
GY
WH
VI
RE
BR
BK
OR
YE
BR
GY
VI
VI
3
1
HDW4
CN4
CN3
CN2
SH1
6
W1
1
CN1
BK
RE
YE
BR
BL
(EUROPE only)
POWER TRANS
POWER P. C. BOARD
YE
WH
RE
YE
RE
WH
C501
WH
BK
POWER SW.
6
1
HDW1
1
5
HDW2
1
3
HDW3
3
1
HDW6
W6
HDW6
1-3
W6
MAIN P. C. BOARD
REMOTE P. C. BOARD
(CH3000R/CH5000R only)

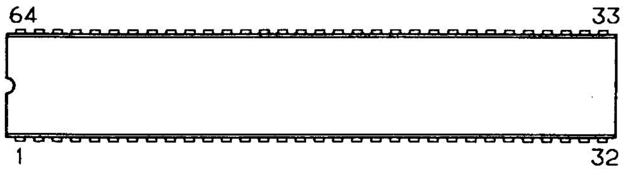
IC & TRANSISTOR LEAD IDENTIFICATION

TRANSISTOR	FRONT VIEW	BOTTOM VIEW	TRANSISTOR	FRONT VIEW	BOTTOM VIEW
2SA1529			2SA1317 2SA1346 2SC3330 2SC3400 2SD1012		
TERMINAL NAME					
B → BASE C → COLLECTOR E → EMITTER					

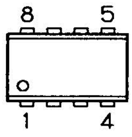
LA6510 FRONT/SIDE VIEWS


1 2 3 4 5 6 7 8 9 10

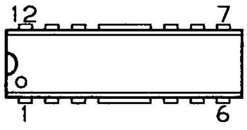
UPD75P216CW TOP VIEW



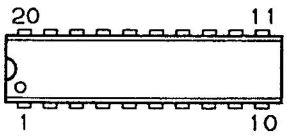
RC4558D TOP VIEW



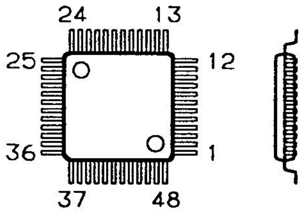
LA6520 TOP VIEW



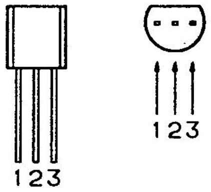
LC7881-C TOP VIEW



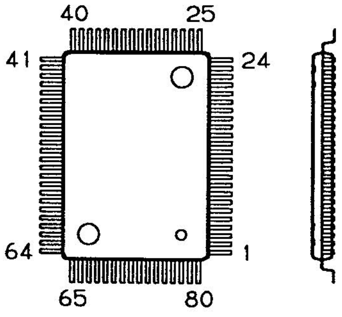
LA9200NM TOP/SIDE VIEWS


24
13
25
12
36
1
37
48

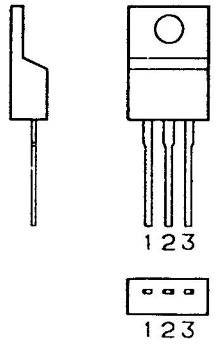
NJM78L06A(T3) TOP/SIDE VIEWS
NJM79L06A(T3) TOP/SIDE VIEWS



YM7121B TOP/SIDE VIEWS

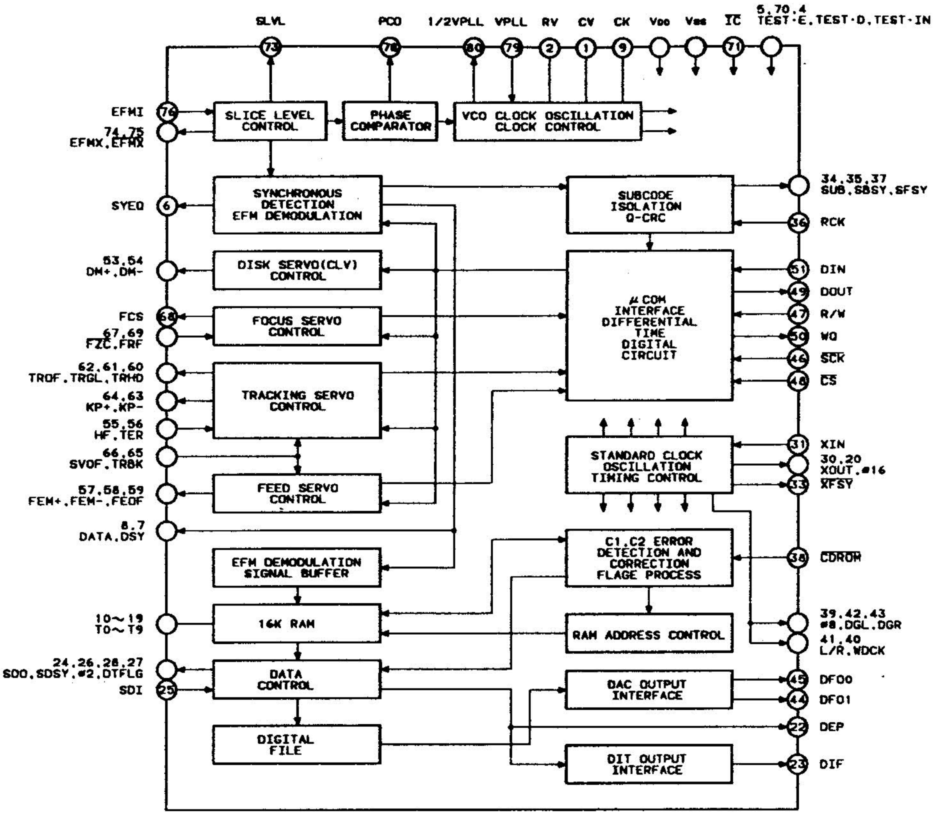

40
25
41
24
64
1
65
80

MC7805CT TOP/SIDE VIEWS

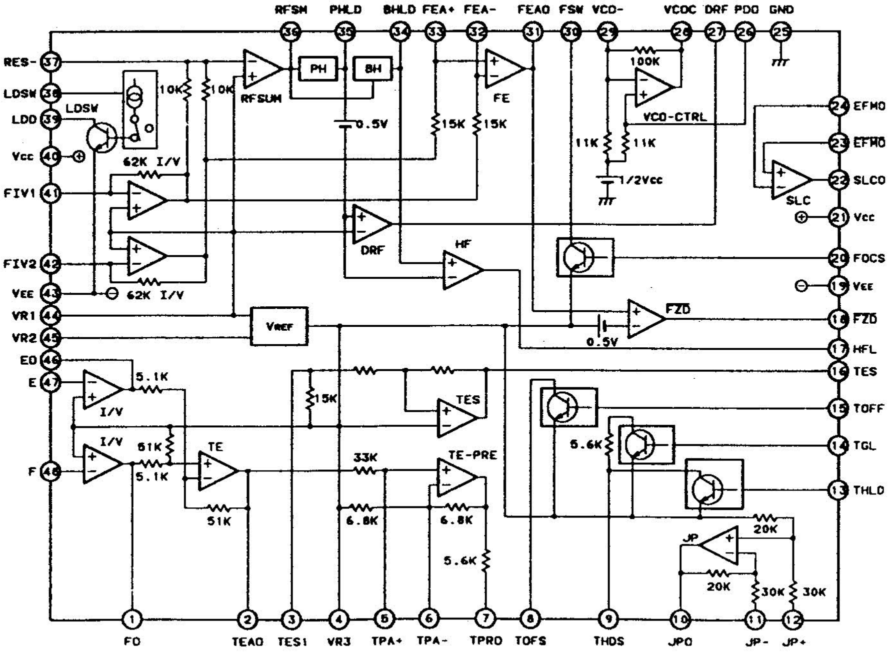


IC BLOCK DIAGRAM

YM7121B BLOCK DIAGRAM

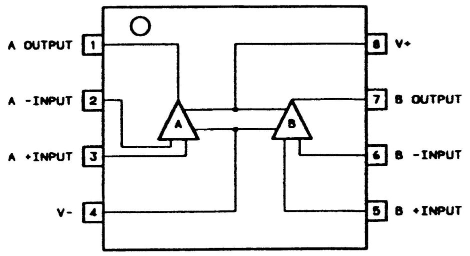

SLVL
PCO
1/2VPLL
VPLL
RV
CV
CK
VDD
VSS
IC
5,70,4
TEST·E,TEST·D,TEST·IN
73
78
80
79
2
1
9
71
EFMI
76
74,75
EFMX,EFMX
SLICE LEVEL CONTROL
PHASE COMPARATOR
VCO CLOCK OSCILLATION CLOCK CONTROL
SYEQ
6
SYNCHRONOUS DETECTION EFM DEMODULATION
SUBCODE ISOLATION Q-CRC
34,35,37
SUB,SBSY,SFSY
36
RCK
53,54
DM+,DM-
DISK SERVO(CLV) CONTROL
μ COM INTERFACE DIFFERENTIAL TIME DIGITAL CIRCUIT
51
DIN
49
DOUT
47
R/W
50
WQ
46
SCK
48
CS
FCS
68
FOCUS SERVO CONTROL
67,69
FZC,FRF
62,61,60
TROF,TRGL,TRHD
64,63
KP+,KP-
TRACKING SERVO CONTROL
55,56
HF,TER
66,65
SVOF,TRBK
57,58,59
FEM+,FEM-,FEOF
FEED SERVO CONTROL
STANDARD CLOCK OSCILLATION TIMING CONTROL
31
XIN
30,20
XOUT,#16
33
XFSY
8,7
DATA,DSY
C1,C2 ERROR DETECTION AND CORRECTION FLAGE PROCESS
38
CDROM
EFM DEMODULATION SIGNAL BUFFER
10～19
T0～T9
16K RAM
RAM ADDRESS CONTROL
39,42,43
#8,DGL,DGR
41,40
L/R,WDCK
24,26,28,27
SDO,SDSY,#2,DTFLG
SDI
25
DATA CONTROL
DAC OUTPUT INTERFACE
45
DFO0
44
DFO1
22
DEP
DIGITAL FILE
DIT OUTPUT INTERFACE
23
DIF

LA9200NM BLOCK DIAGRAM

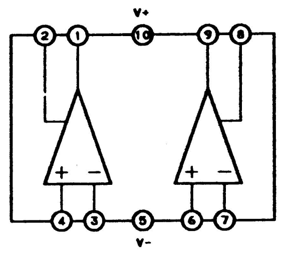

RFSM
PHLD
BHLD
FEA+
FEA-
FEAO
FSW
VCO-
VCOC
DRF
PDO
GND
36
35
34
33
32
31
30
29
28
27
26
25
RES-
37
LDSW
38
LDD
39
LDSW
Vcc
40
FIV1
41
FIV2
42
VEE
43
VR1
44
VR2
45
EO
46
E
47
F
48
10K
10K
RFSUM
PH
BH
0.5V
FE
15K
15K
100K
VCO-CTRL
11K
11K
1/2Vcc
62K I/V
62K I/V
DRF
HF
24
EFMO
23
EFMO
SLC
22
SLCO
21
Vcc
20
FOCS
19
VEE
FZD
18
FZD
VREF
0.5V
17
HFL
16
TES
15K
TES
15
TOFF
14
TGL
13
THLD
5.1K
I/V
I/V
51K
5.1K
TE
51K
33K
TE-PRE
6.8K
6.8K
5.6K
5.6K
JP
20K
20K
30K
30K
1
FO
2
TEAO
3
TES1
4
VR3
5
TPA+
6
TPA-
7
TPRO
8
TOFS
9
THDS
10
JPO
11
JP-
12
JP+

IC BLOCK DIAGRAM (Continued)

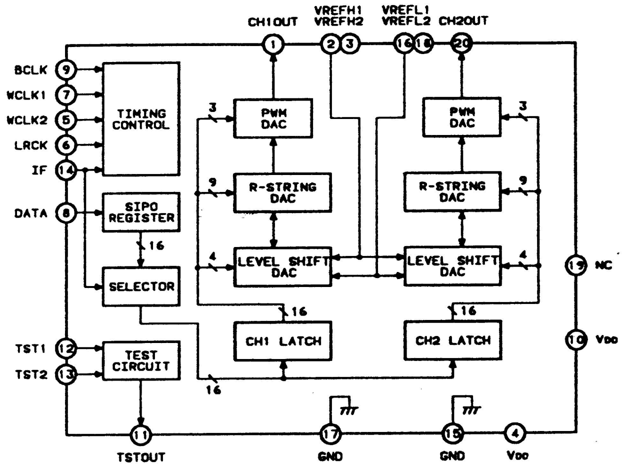
RC4558D BLOCK DIAGRAM


A OUTPUT 1
A -INPUT 2
A +INPUT 3
V- 4
8 V+
7 B OUTPUT
6 B -INPUT
5 B +INPUT
A
B

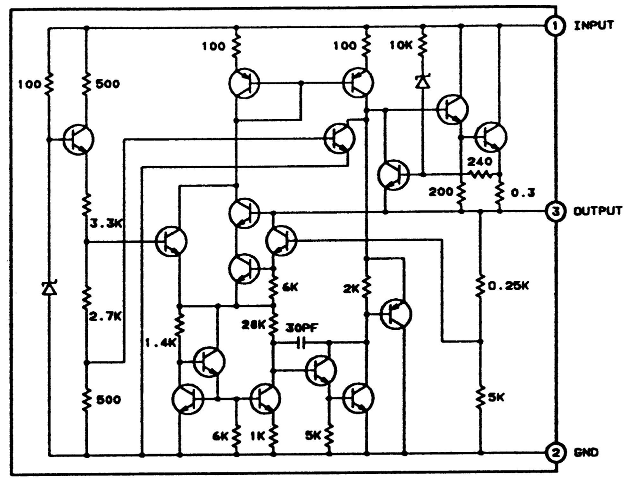
LA6510 BLOCK DIAGRAM


V+
2 1 10 9 8
4 3 5 6 7
V-

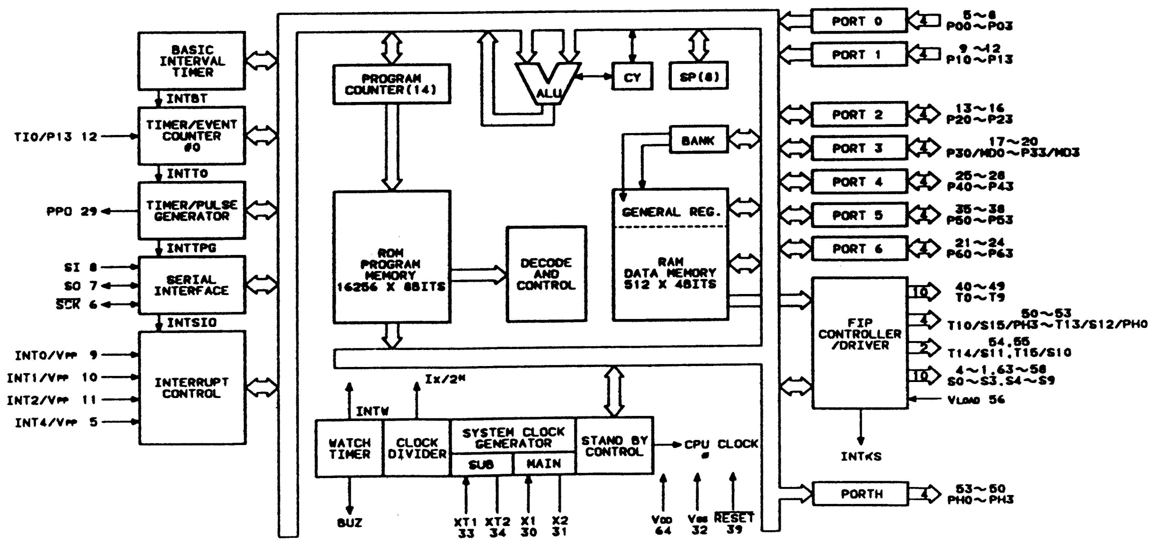
LC7881-C BLOCK DIAGRAM


CH1OUT
VREFH1 VREFH2
VREFL1 VREFL2
CH2OUT
BCLK 9
WCLK1 7
WCLK2 5
LRCK 6
IF 14
DATA 8
TST1 12
TST2 13
TIMING CONTROL
SIPO REGISTER
SELECTOR
TEST CIRCUIT
PWM DAC
R-STRING DAC
LEVEL SHIFT DAC
CH1 LATCH
CH2 LATCH
NC 19
VDD 18
TSTOUT 11
GND 17
GND 15
VDD 4

MC7805CT BLOCK DIAGRAM

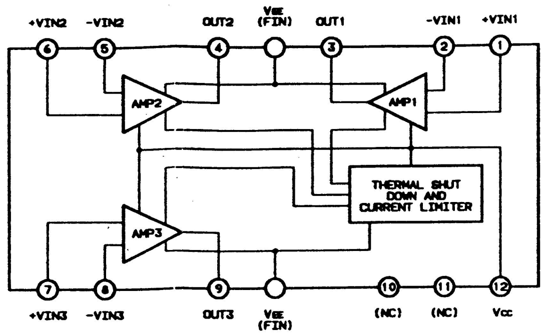

1 INPUT
3 OUTPUT
2 GND
100
500
3.3K
2.7K
1.4K
10K
240
200
0.3
6K
2K
28K
30PF
0.25K
5K
1K

UPD75P216CW BLOCK DIAGRAM

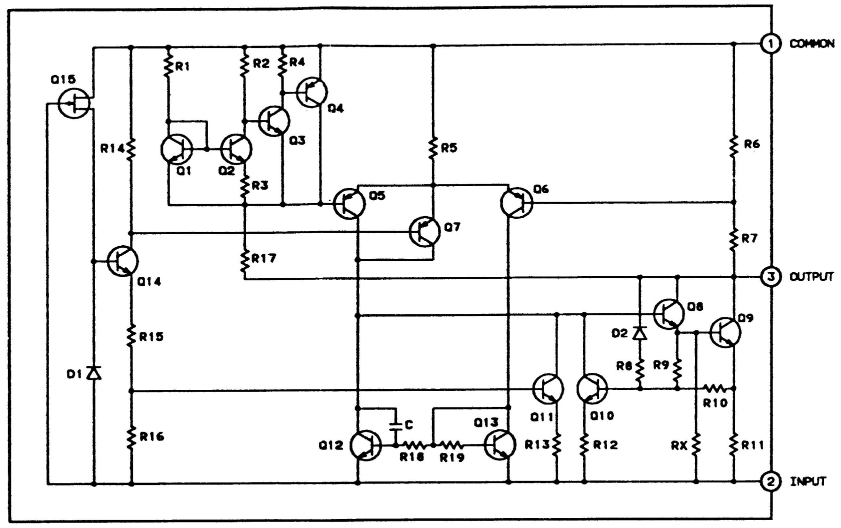

BASIC INTERVAL TIMER
INTBT
TIMER/EVENT COUNTER #0
TI0/P13 12
INTT0
TIMER/PULSE GENERATOR
PPO 29
INTTPG
SERIAL INTERFACE
SI 8
SO 7
SCK 6
INTSIO
INTERRUPT CONTROL
INT0/VPP 9
INT1/VPP 10
INT2/VPP 11
INT4/VPP 5
PROGRAM COUNTER(14)
ALU
CY
SP(8)
BANK
ROM PROGRAM MEMORY 16256 X 8BITS
DECODE AND CONTROL
GENERAL REG.
RAM DATA MEMORY 512 X 4BITS
IX/2N
INTW
WATCH TIMER
CLOCK DIVIDER
SYSTEM CLOCK GENERATOR
SUB
MAIN
STAND BY CONTROL
CPU CLOCK
BUZ
XT1 33
XT2 34
X1 30
X2 31
VDD 64
VSS 32
RESET 39
PORT 0 5~8 P00~P03
PORT 1 9~12 P10~P13
PORT 2 13~16 P20~P23
PORT 3 17~20 P30/MD0~P33/MD3
PORT 4 25~28 P40~P43
PORT 5 35~38 P50~P53
PORT 6 21~24 P60~P63
FIP CONTROLLER /DRIVER
40~49 T0~T9
50~53 T10/S15/PH3~T13/S12/PH0
54,55 T14/S11,T15/S10
4~1,63~58 S0~S3,S4~S9
VLOAD 56
INTKS
PORTH 53~50 PH0~PH3

IC BLOCK DIAGRAM (Continued)

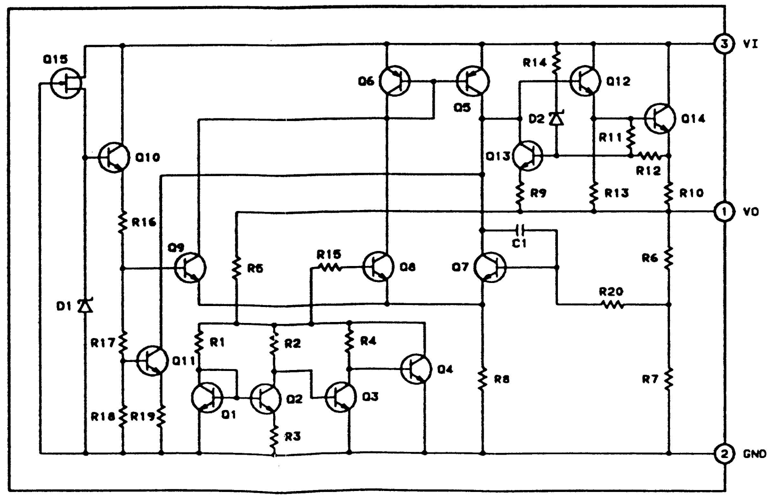
LA6520 BLOCK DIAGRAM


+VIN2 6
-VIN2 5
OUT2 4
VEE (FIN)
OUT1 3
-VIN1 2
+VIN1 1
AMP2
AMP1
AMP3
THERMAL SHUT DOWN AND CURRENT LIMITER
+VIN3 7
-VIN3 8
OUT3 9
VEE (FIN)
(NC) 10
(NC) 11
VCC 12

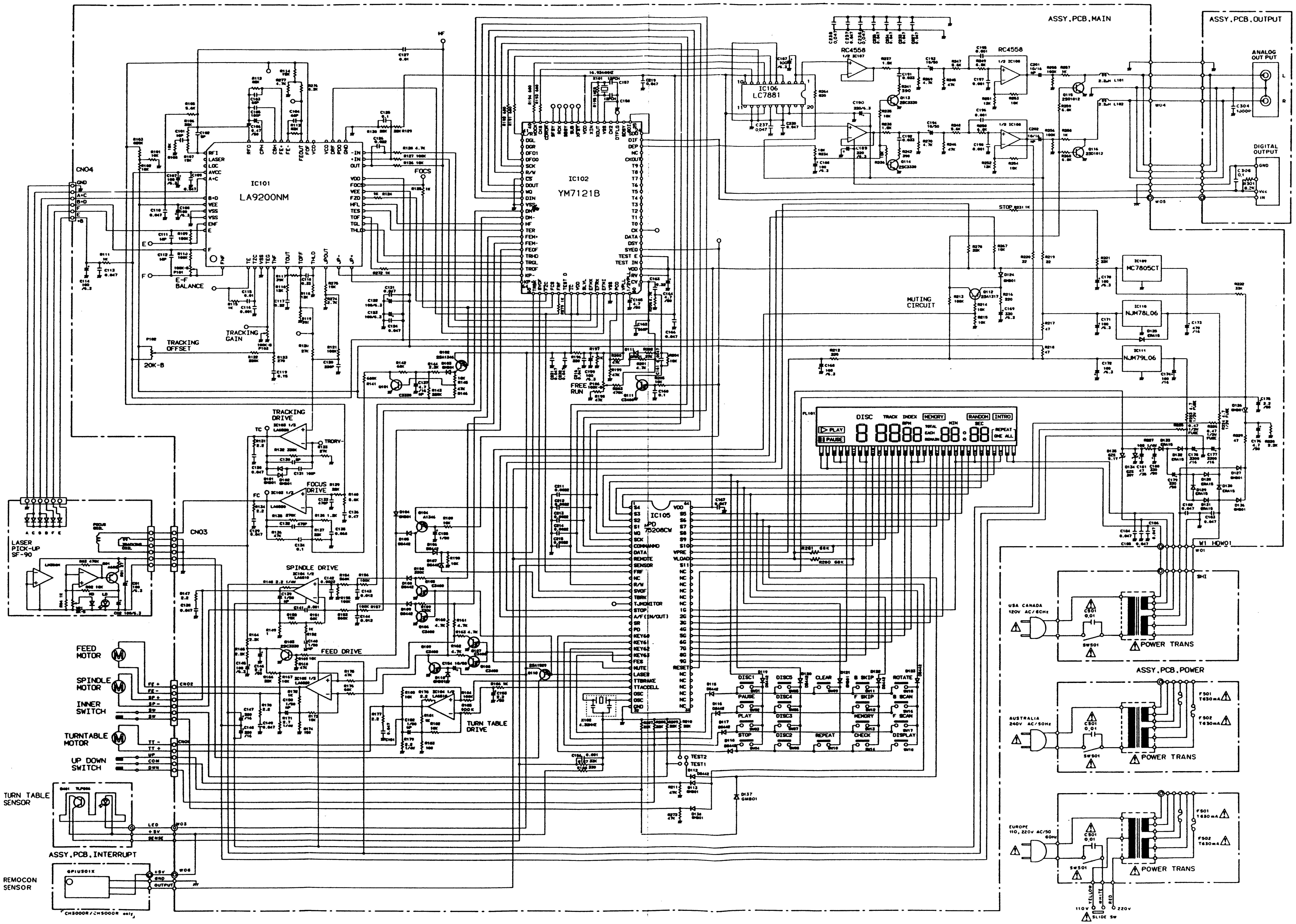
NJM79L06A(T3) BLOCK DIAGRAM


1 COMMON
3 OUTPUT
2 INPUT
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15
R1 R2 R3 R4 R5 R6 R7 R8 R9 R10 R11 R12 R13 R14 R15 R16 R17 R18 R19 RX
D1 D2
C

NJM78L06A(T3) BLOCK DIAGRAM


3 VI
1 VO
2 GND
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15
R1 R2 R3 R4 R5 R6 R7 R8 R9 R10 R11 R12 R13 R14 R15 R16 R17 R18 R19 R20
D1 D2
C1

SCHEMATIC DIAGRAM


ASSY,PCB,MAIN
ASSY,PCB,OUTPUT
ANALOG OUT PUT
DIGITAL OUTPUT
IC101
LA9200NM
IC102
YM7121B
IC106
LC7881
RC4558
IC109
MC7805CT
IC110
NJM78L06
IC111
NJM79L06
MUTING CIRCUIT
IC105
μPD 75208CW
CN04
CN03
CN02
CN01
E-F BALANCE
TRACKING GAIN
TRACKING OFFSET
20K-B
FOCS
FREE RUN
TRACKING DRIVE
FOCUS DRIVE
SPINDLE DRIVE
FEED DRIVE
TURN TABLE DRIVE
LASER PICK-UP SF-90
FEED MOTOR
SPINDLE MOTOR
INNER SWITCH
TURNTABLE MOTOR
UP DOWN SWITCH
TURN TABLE SENSOR
ASSY,PCB,INTERRUPT
REMOCON SENSOR
GP1U501X
CH3000R/CH5000R only
DISC
TRACK
INDEX
MEMORY
RANDOM
INTRO
PLAY
PAUSE
REPEAT
ONE ALL
STOP
DISC1
DISC2
DISC3
DISC4
DISC5
CLEAR
B SKIP
F SKIP
ROTATE
B SCAN
F SCAN
MEMORY
CHECK
DISPLAY
TEST2
TEST1
USA CANADA 120V AC/60Hz
AUSTRALIA 240V AC/50Hz
EUROPE 110, 220V AC/50 60Hz
POWER TRANS
ASSY,PCB,POWER
F501 T630mA
F502 T630mA
SW501
110V
220V
SLIDE SW
YELLOW
WHITE
RED
16.9344MHz
4.19MHz

VOLTAGES

TRANSISTOR DC VOLTAGES

Ref. No.	DEVICE	B	C	E	Ref. No.	DEVICE	B	C	E	Ref. No.	DEVICE	B	C	E
Q101	2SC3330	0.6V	0V	0V	Q107	2SC3400	4.8V	0V	0V	Q113	2SC3330	0V	2.2V	0V
Q102	2SA1346	0V	4.9V	4.9V	Q108	2SC3400	4.9V	0V	0V	Q114	2SC3330	0V	2.2V	0V
Q103	2SC3330	0.6V	0V	0V	Q109	2SC3400	0V	0V	0V	Q115	2SD1012	0.6V	0V	0V
Q104	2SA1346	1.2V	4.9V	4.9V	Q110	2SA1529	4.8V	0.2V	4.2V	Q116	2SD1012	0.6V	0V	0V
Q105	2SC3400	4.9V	0V	0V	Q111	2SC3400	0V	0V	0V					
Q106	2SC3400	4.8V	0V	0V	Q112	2SA1317	3.6V	4.3V	4.3V					

IC PIN NUMBERS DC VOLTAGES

Ref. No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
IC101	LA9200NM	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V	4.4V	0V	4.4V	4.4V	0V	0V
		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
		5.2V	0V	2.4V	2.4V	0V	2.5V	0V	2.5V	2.5V	0V	0V	0.5V	0.5V	−0.2V	−0.2V	−0.1V	0V	4.0V	0V	5.2V
		41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
		0V	0V	−5.2V	0V	0V	0V	0V	0V	–	–	–	–	–	–	–	–	–	–	–	–

IC PIN NUMBERS DC VOLTAGES

Ref. No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
IC102	YM7121B	0V	2.7V	4.9V	4.9V	4.9V	0V	0.2V	0V	0V	4.8V	4.8V	4.8V	4.8V	4.8V	4.8V	4.8V	4.8V	1.9V	2.0V	1.7V
		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
		0V	0V	2.3V	0V	0V	2.4V	3.2V	2.2V	0V	2.1V	2.0V	4.9V	4.0V	0.9V	0V	0V	0V	4.8V	1.8V	2.4V
		41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
		2.4V	0V	1.6V	0V	0V	4.9V	0V	0V	0V	0V	0V	0V	0V	0V	4.4V	4.4V	0V	0V	4.8V	0V
		61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
		0V	4.8V	0V	0V	4.4V	4.9V	4.4V	0V	0V	4.9V	4.9V	4.9V	3.2V	2.4V	2.4V	2.0V	0V	1.9V	0.2V	0.3V

IC PIN NUMBERS DC VOLTAGES

Ref. No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12
IC103	LA6520	0V	0V	−0.7V	0V	0V	0V	0V	0V	0V	0V	0V	11.9V
IC104	LA6510	0V	0V	0V	0V	−11.8V	0V	0V	0V	0V	11.9V	–	–

IC PIN NUMBERS DC VOLTAGES

Ref. No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
IC105	UPD75R-216	−27.9V	−13.2V	−2.3V	−13.2V	0V	4.9V	0V	0V	2.3V	4.8V	0V	2.1V	0V	4.9V	4.9V	0V	4.9V	4.9V	0V	4.9V
		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
		0V	1.6V	1.6V	0V	4.8V	0V	4.8V	0V	0V	2.4V	2.5V	0V	0V	4.9V	0V	0V	0V	0V	4.9V	−28.4V
		41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
		−28.2V	−28.2V	−28.1V	−28.1V	−28.2V	−28.2V	−28.2V	−28.2V	−31.6V	−0.4V	−0.3V	−0.2V	−0.2V	−0.7V	−16.6V	−31.7V	−6.0V	−19.2V	−27.8V	−31.6V
		61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
		−16.5V	−16.6V	−2.2V	4.9V	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

IC PIN NUMBERS DC VOLTAGES

Ref. No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
IC106	LC7881	2.3V	4.6V	4.6V	4.9V	0V	2.4V	2.4V	0V	2.3V	4.9V	2.0V	0V	0V	4.9V	0V	0V	0V	0V	0V	0V
IC107	RC4558D	2.3V	2.3V	2.3V	−5.8V	2.3V	2.3V	2.3V	5.8V	–	–	–	–	–	–	–	–	–	–	–	–
IC108	RC4558D	0V	0V	0V	−5.8V	0V	0V	0V	5.8V	–	–	–	–	–	–	–	–	–	–	–	–
IC109	MC7805CT	11.3V	0V	4.9V	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
IC110	NJM78L06A	6.0V	0V	11.4V	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
IC111	NJM79L06A	0V	−11.7V	−5.9V	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–